

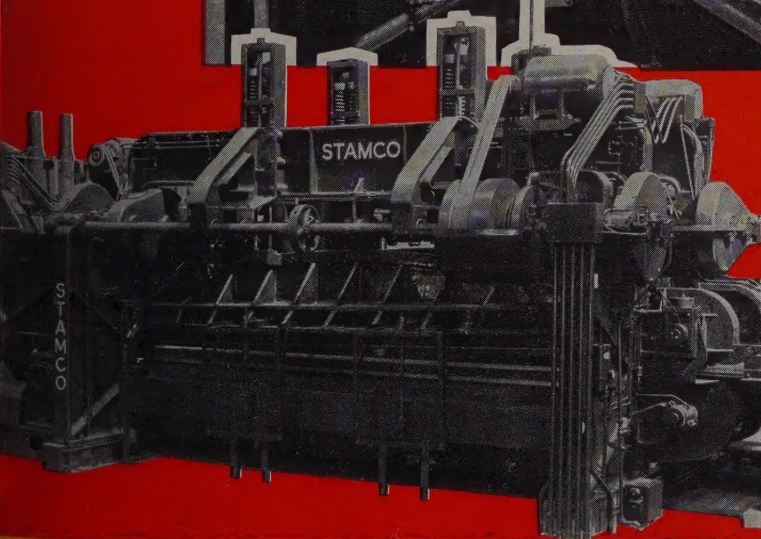
May 22, 1939

TEEL

CTION • PROCESSING • DISTRIBUTION • USE

ESTABLISHED 1882

STAMCO AUTOMATIC SHEAR

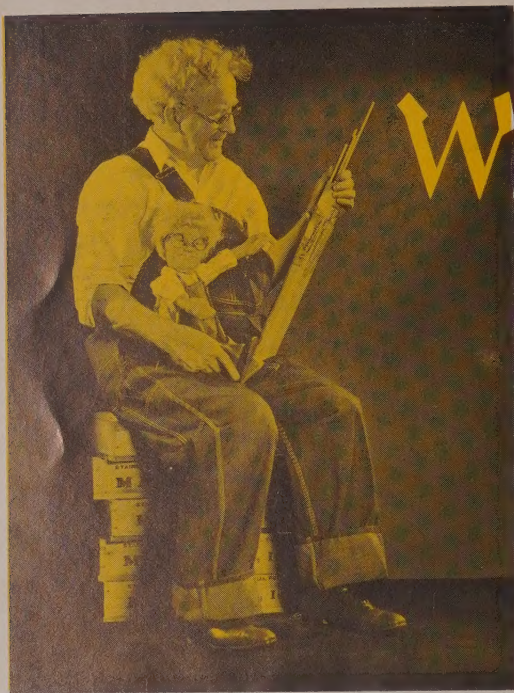


STAMCO again contributes to the industry's economics with the introduction of its new Automatic Resquaring Unit . . . designed to shear a sheet straight, free from camber, and square to the customer's requirements . . . The machine proper consists of a feed table, two side cut shears equipped with rotary conveyors, two end cut shears equipped with telescoping center table and pinch rolls, delivering the steel to a runout table. The shears are mounted on rails and one shear in each unit is adjustable to the other. The shear is designed in three sizes as for side cutting, 170", 210" and 250" and any practical width.

STAMCO
E TOOL & MANUFACTURING COMPANY

BUILDERS OF STAMCO SHEET AND PLATE MACHINERY

NEW BREMEN, OHIO



Whitey

announces

*the completion of the past
tour through his plant and
to thank those of you who
patient enough to accompany
and Junior through this four
month period. It is Whitey's hope that you have bettered
knowledge of the making of an electrode whose many
conforms more to a quality standard rather than
price. It was with this in mind that open-house was de-*

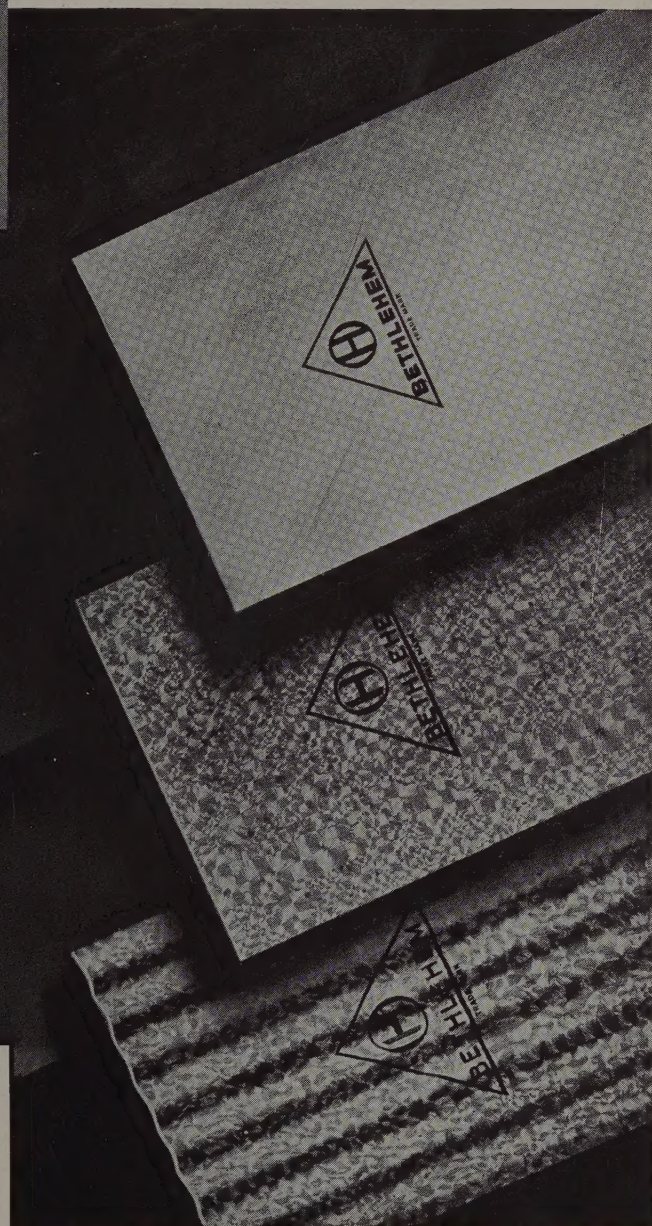
*Future Maurath advertising in this space will get
the antics of Junior—wherein a bit of fable will be done
with fact . . . To assimilate both oftentimes provides for a
balanced life; a life undrugged with too many technical*

***If you would like to possess a complete
folio of the shop series, beautifully printed
heavy enameled stock, kindly write to
in which publication you followed the**

MAURATH, INC., CLEVELAND
BUILDER OF BETTER WELDING ELECTRODES IN ALL AMERICA

BETHLEHEM STEEL SHEETS

Hot-rolled
Cold-rolled
Galvanized



Bethlehem makes steel sheets for all purposes. These include: hot-rolled, hot-rolled annealed, hot-rolled pickled, cold-rolled, galvanized, and formed roofing and siding; sizes up to a maximum of 72 inches wide, depending on gage; and three materials: standard open-hearth steel; Beth-Cu-Loy copper-bearing steel; and Mayari R for high strength and corrosion-resistance.


Sheets are made at both the Lackawanna (Buffalo) and Sparrows Point (Baltimore) Plants and all are available through distributors. If you do not know the names of Bethlehem Sheet distributors near you, write Bethlehem Steel Co., Bethlehem, Pa.



BETHLEHEM STEEL COMPANY

RESEARCH LIBRARY

WORKS PROGRESS ADMINISTRATION



Close fitting...free acting
...continuous hinges are
produced at low cost on
Cincinnati Press Brakes.



THE CINCINNATI SHAPER COMPANY, CINCINNATI, OHIO

SHAPERS • SHEARS • BRAKES

Columbium-Bearing STAINLESS STEEL Serves the Process Industries

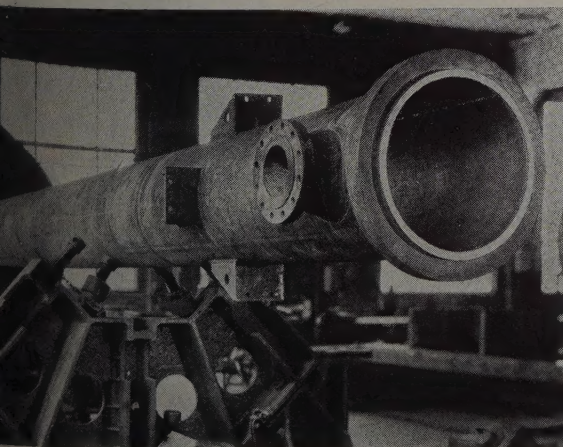


100-gallon tank car, made of columbium-bearing stainless steel welded with columbium-bearing welding rod, keeps shipments iron-free to the extent of one part per million.



Columbium-bearing stainless steel in this 12-inch blowpit pipe, paper mill assures high corrosion resistance regardless of temperatures encountered during fabrication and service.

Welding of columbium-bearing stainless steel welded into this steel heat exchanger shell effectively resists severe stresses under extremes of pressure and temperature.



STAINLESS steel is corrosion-resistant because it contains chromium. When stainless steel is alloyed with columbium, full corrosion resistance is retained even after long exposure to temperatures ranging from 750 to 1650 deg. F. It will pay you to consider columbium-bearing stainless steel for your chemical processing equipment.

We do not make steel. But for over thirty years we have manufactured "Electromet" ferro-alloys and metals used in making steel. Ferrochromium and ferrocolumbium, used for adding chromium and columbium to steel, are two of these ferro-alloys. . . . Further information and metallurgical assistance based on this wide experience are available to help you make your use of stainless and other alloy steels and irons profitable.

ELECTRO METALLURGICAL COMPANY

Unit of Union Carbide and Carbon Corporation



30 East 42nd Street New York, N. Y.

In Canada: Electro Metallurgical Company of Canada, Limited, Welland, Ontario.

Electromet

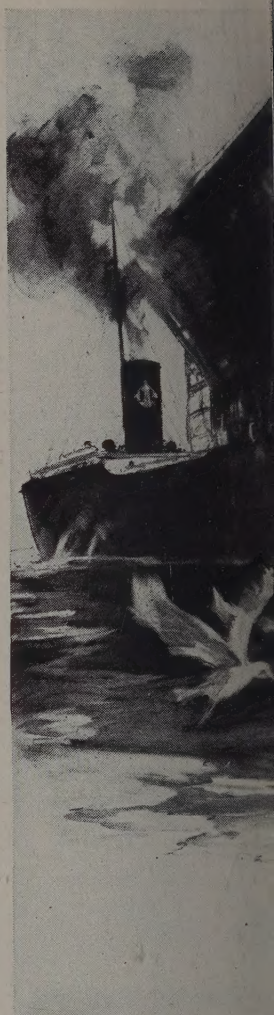
TRADE-MARK

Ferro-Alloys & Metals

The word "Electromet" is a registered trade-mark of Electro Metallurgical Company.

“GRADED” ORES ASSURE CONSTANT STREAM OF QUALITY IN J & L STEEL

*The control of quality in J & L Steel begins with the raw materials and carries through, step by step, to the finished product—giving you **CONTROLLED QUALITY** steels exactly suited to your needs.*



Copyright 1939—Jones & Laughlin



“The controlled quality of J & L Steel begins with the raw materials—the iron ore—the coal—the limestone. You see an example of our quality control here. The loading of a J & L steamship is not done by guesswork. No! All the iron ore going into the ship is uniform in quality—by analysis.

“Before shipping of ore starts in the Spring—when navigation opens on the Great Lakes—the average analyses of ore in all open-pit and underground mines have been determined from core hole records and underground workings. This is done by our chemists and metallurgists—just to ascertain the differences in ‘blood’ by analysis and ‘type’ it. It then becomes the job of the shipper to see that the various ores to be transported by J & L ore boats are so mixed that the quality of the ore grade or group of ores is constantly uniform throughout the lake shipping season.

“Thus from our mines . . . right through to our blast furnaces . . . these analyses govern the quality of the phosphorus and other chemical contents of the ore, so that we may produce steels to your liking from graded ores best suited to their making. Naturally, the proper ingredients and the skill of the men making them according to formula, constantly checked by our quality controls, give you better-working steels than new steels that readily lend themselves to the making of more useful, beautiful, enduring things for everyday living.

“This operation of loading J & L ore boats here at the Lake Superior docks, each with 12,000 tons of ore,



"All the iron ore going into that boat
is uniform in quality — by analysis"

From a drawing by ORISON MacPHERSON

aded ore, is just another step in the whole J & L process of making *controlled quality* steel. You
our new Pilot Plant Laboratory—the only one of its kind—where, in our 'pint-sized' furnaces and
ing mills, we make steel by the pound to improve it by the ton. You saw it in the 'skull practice' in
s where our metallurgists were reporting upon their scientific findings to our men in the operating
nt. You will see more of it when we get on to the blast furnaces, the Bessemer converters and the
th furnaces—all along the line from raw materials to finished steel in every form.
e stream of quality that has been flowing through J & L production these 89 years — broader
er today, thanks to this further joining of scientific control to the practical experience of the men in
It makes our partnership with you and all American Industry one of progress that opens doors to
ucts, new industries, and greater employment."

J & LAUGHLIN STEEL CORPORATION

AN IRON AND STEEL WORKS

BURGH. PENNSYLVANIA

—PARTNER IN PROGRESS TO AMERICAN INDUSTRY



RESEARCH LIBRARY

WORKS PROGRESS ADMINISTRATION

The CLEVELAND-CLIFFS
IRON COMPANY *Cleveland*



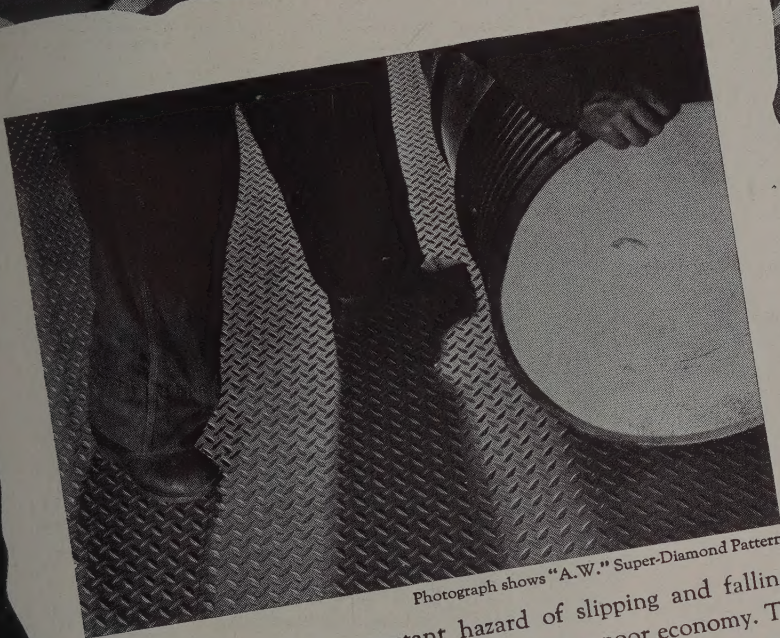
IRON ORE

TRANSPORTATION

COAL

Since
1850

NOW—Safe Floors that Save You Money



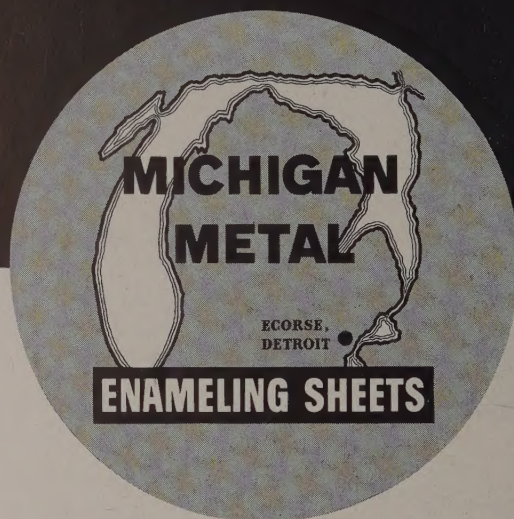
Photograph shows "A.W." Super-Diamond Pattern

Heavy traffic and the constant hazard of slipping and falling accidents make ordinary industrial flooring a poor economy. To get maximum service from traffic aisles, stair treads, runways and catwalks . . . to help men and equipment to move safely and swiftly, use "A.W." Rolled Steel Floor Plate. Easy to clean and quick to drain. Oil-proof, heat-proof, crack-proof. Can be cut to any shape and installed without disturbing production. No maintenance expense because toughest traffic will not damage or impair it. If you want to know how little "A.W." Rolled Steel Floor Plate costs in terms of trouble-free floor protection, write for literature showing five patterns and giving complete engineering data.

"A.W." Rolled Steel FLOOR PLATE ALAN WOOD STEEL COMPANY

MAIN OFFICE AND MILLS, CONSHOHOCKEN, PENNA. : : SINCE 1826 : : DISTRICT OFFICES
AND REPRESENTATIVES—Philadelphia, New York, Boston, Detroit, Los Angeles, Seattle, San
Francisco, Houston, Roanoke, Buffalo, Pittsburgh, Cleveland, Chicago, Cincinnati, New
Orleans, St. Paul, St. Louis, Montreal. PRODUCTS INCLUDE—"A.W." Rolled Steel Floor
Plate : : "Swede" Pig Iron : : Billets—Blooms and Slabs : : Sheared Steel Plates : : Hot
Rolled Sheets and Strip : : Steel Products also furnished in Copper and Alloy analyses.

Showmanship starts with Michigan Metal



MICHIGAN METAL sheets are ideally suited to the requirements of modern merchandising design. They have the strength to stand the punishment of forming operations. They have the smooth surface that assures a clean, glassy-sleek enamel finish. They have the right porous structure

to make enamel adhere to them. They weld and drawn and annealed easily.

Michigan Metal is a better enamel. It helps you make a better product.

Write for complete information.



GREAT LAKES STEEL CORPORATION • DETROIT, MICH

DISTRICT OFFICES: *Boston*, 1001 Statler Building; *Buffalo*, 1000 Walbridge Building; *Chattanooga*, Hamilton Bank Building; *Chicago*, Building; *Cleveland*, 820 Leader Building; *Dayton*, 846 Third National Bank Building; *Indianapolis*, 1215-17 Circle Tower; *New York*, Avenue; *Philadelphia*, 407 Liberty Trust Building; *St. Louis*, 3615 Olive Street; *San Francisco*, 824 Sharon Building; *Toledo*, 906 Ed

DIVISION OF

NATIONAL STEEL CORPORATION



Venus could
powder her nose
in the world's most
perfect "Looking Glass"



Problem: Astronomers constantly seek better means to help fathom the secrets of the universe. One important goal is the attainment of near perfection in the finish of telescope mirrors. The more perfect the mirror, the clearer the image of each celestial body. And sharper images mean greater accuracy in astronomical calculations.

Answer: With the completion of the great 82-inch eye for the new McDonald Observatory in West Texas, built by The Warner & Swasey Co., science has succeeded in producing the world's finest mirror.

The grinding and polishing took four years. Experts say it is more accurate than any telescope mirror ever tested before. Less than one one-millionth of an inch is the deviation in the mirror's parabolic surface.

We are proud that Carborundum Brand Silicon Carbide Grain was used exclusively to prepare the highly accurate surface for the final finishing and polishing with rouge. The use of abrasives by Carborundum on one of the world's finest grinding and polishing jobs is a high compliment to one of the world's most useful abrasives... "Carborundum".

**AN INVITATION TO EXECUTIVES
CONCERNED WITH MANUFACTURING**

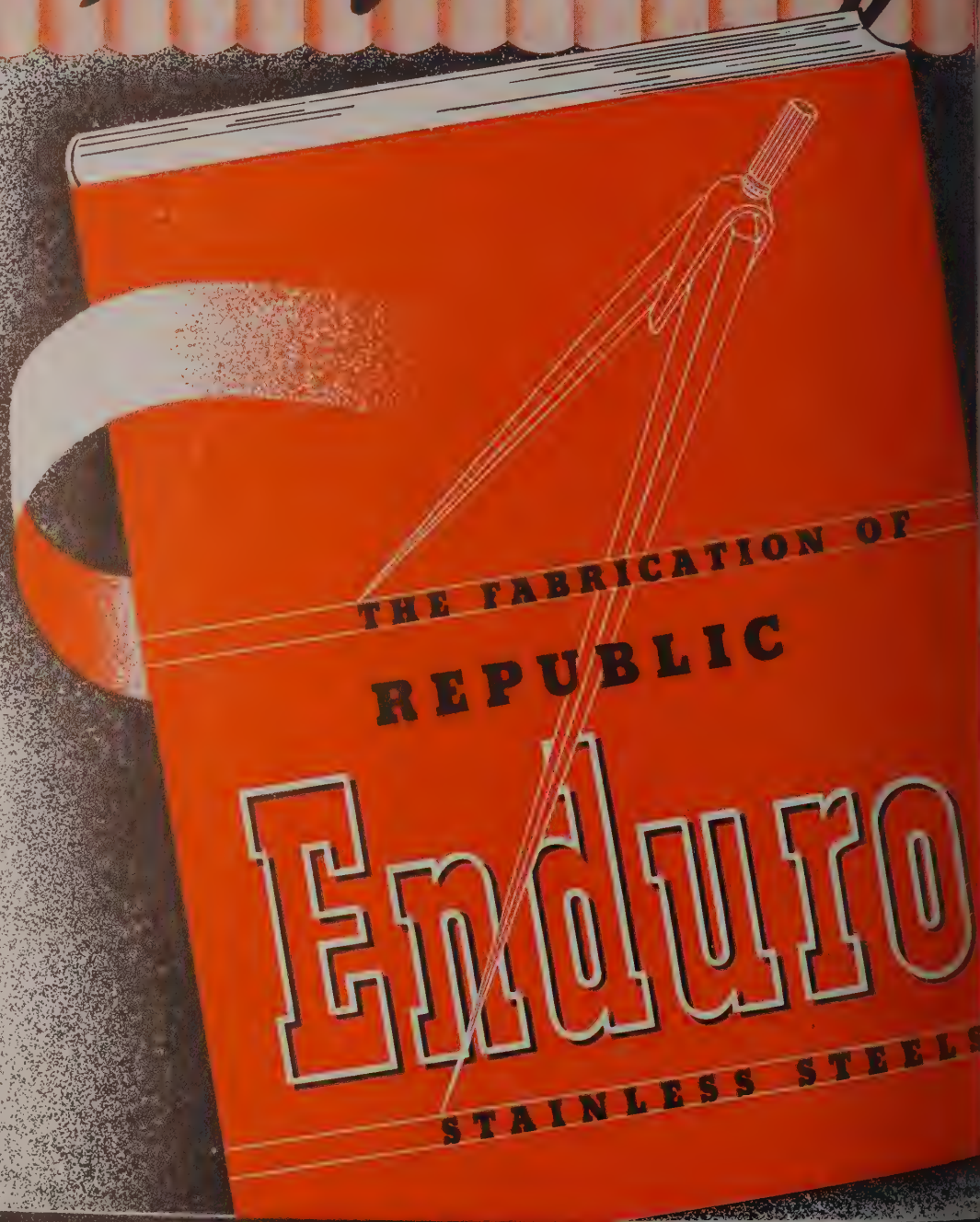
Whatever you make, there are two ways in which The Carborundum Company's Abrasive Service can help your company. Highly trained abrasive engineers are ready to help solve any special grinding or finishing problem that may confront you. Also, without obligation, they will study your present abrasive set-up, report on its efficiency, and wherever possible, indicate how production can be improved or savings effected. Write to The Carborundum Company, Niagara Falls, N. Y. and a representative will call.

CARBORUNDUM
REG. U. S. BRAND PAT. OFF.
ABRASIVE PRODUCTS



FOR ACCURACY AND ECONOMY IN MANUFACTURE

Five foot shelf



REPUBLIC STEEL CORPORATION

GENERAL OFFICES: CLEVELAND, OHIO • ALLOY STEEL DIVISION: MASSILLON

INLESS STEEL FABRICATION

A Handy Classic

actical Information... helpful if
draw, form, spin, machine or
rwise fabricate stainless steel.

wo years in the making, this book
now ready for distribution...

nds of hours have been spent by Republic men
ats the country over wherever stainless steel is
their findings, in the form of reports that would
ill a five-foot shelf, have been boiled down into
e book of easily-understood directions, without
or generalities. And now, Republic offers you
book containing just the factual data every fabri-
of stainless steel needs to save time and material.

coupon below will reserve a copy of the new
RO* Fabrication Book for you.



An expert shows the successive steps in the spinning of an ENDURO reflector. This is the second stage of spinning.

EXCERPTS

"For dies and shear blades, steels of the cobalt-chromium type or steels with similar high alloy content are recommended."

"The most suitable lubricants have either an oil or animal fat base highly sulphurized."

Table of blank diameters for shells from 1/4" to 12" dia.—from 1/2" to 12" long.

"Clearance between punch and draw die should be about twice that used on ordinary steel."

"Spinning of large stainless steel coffee-urn tops and similar products is now accomplished without difficulty with ENDURO 18-8-FS."

"When making forming rolls the surface should be burnished to a high finish."

"Grind drills for stainless steel slightly more blunt than for ordinary steel, approximately 70 degrees from the center line of the drill."



ND DRAWN STEEL DIVISION
STEEL PRODUCTS DIVISION
R MANUFACTURING DIVISION
USCON STEEL COMPANY
TEEL AND TUBES, INC.

Please send a copy of the
ENDURO Fabrication Book to:

Name _____

Company _____

Address _____

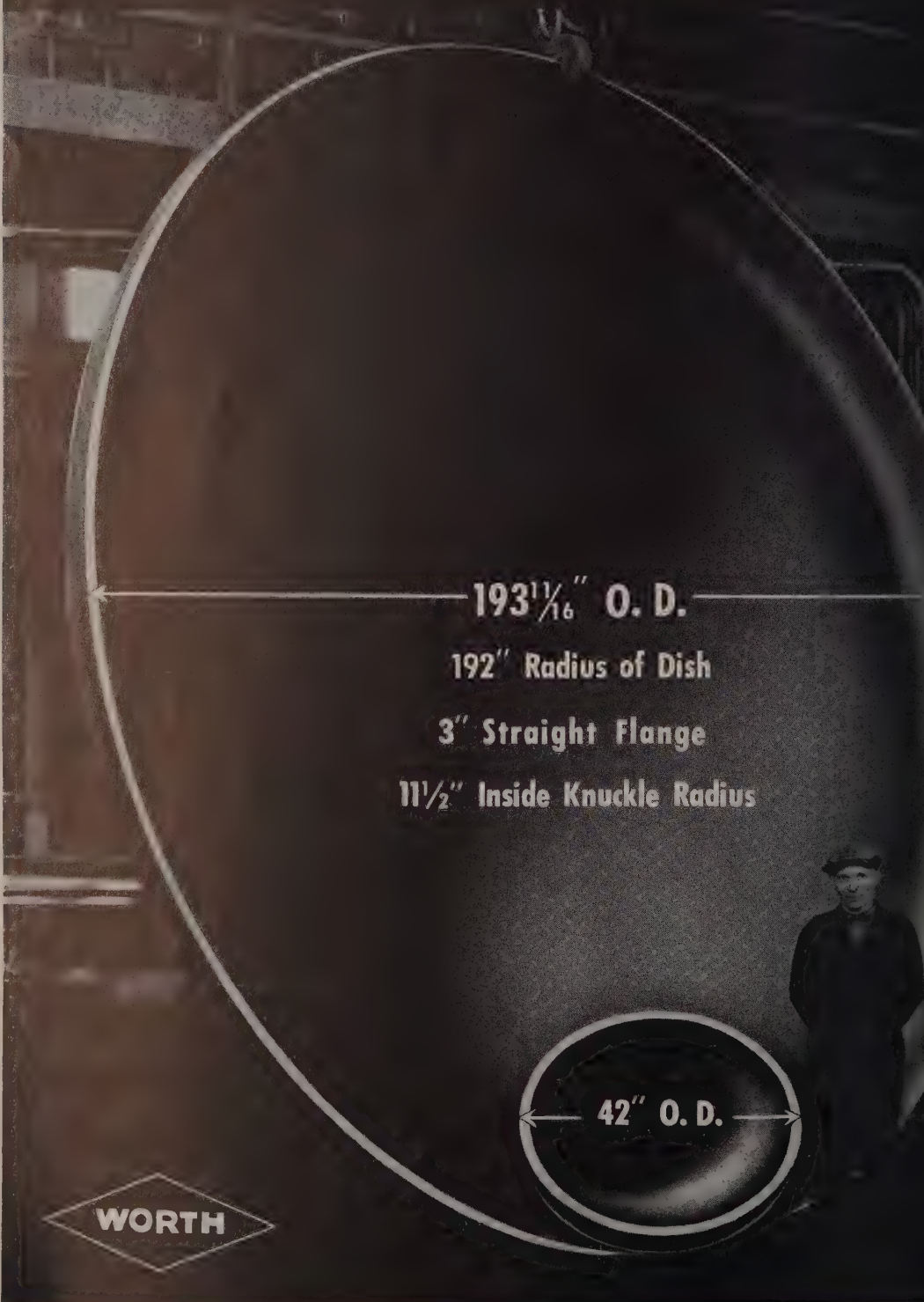
My position is _____

When writing Republic Steel Corporation for further information, please address Department ST.

FLANGED & DISHED HEADS DON'T COME MUCH LARGER THAN THIS!

(OR BETTER!)

Contrast the Flanged and Dish Head, pictured below, with the comparatively small 42" Head! . . . Unusual in the scope of problems involved. But its outstanding going quality is only typically WORTH. Every WORTH Flanged and Dish Head, small or large, is the product of WORTH STEEL COMPANY • Claymo



193 $\frac{1}{16}$ " O. D.

192" Radius of Dish

3" Straight Flange

11 $\frac{1}{2}$ " Inside Knuckle Radius

42" O. D.

WORTH

IMPORTANT MESSAGE to manufacturers who fabricate galvanized sheets



From experience how difficult it is to form galvanized sheets severely without breaking the zinc coating.

ARMCO Research gives you the answer to this problem in ARMCO ZINCGRIP — a new kind of sheet on which the coating clings firmly to the metal, even during severe forming, stamping and bending operations. It's an attractive sheet, too. Optional coating adherence assures complete adhesion at all points. No more peeling or flaking edges to spoil the appearance and shorten the life of your products.

For the selling advantages this gives you. Sales are easier, when you can point out that your

ARMCO ZINCGRIP products have a smooth, unbroken coating that looks better and lasts longer.

You can buy ARMCO ZINCGRIP in either coils or sheets, with a choice of these three base metals: durable ARMCO Ingot Iron, copper-bearing steel, or open hearth steel. Just mail the handy coupon for prices and complete information. The American Rolling Mill Company, 860 Curtis Street, Middletown, Ohio, U. S. A.

MAIL FOR ZINCGRIP FACTS

The American Rolling Mill Company,
860 Curtis Street, Middletown, Ohio.

Please send me complete information about the new ARMCO ZINCGRIP sheets and coils.

We may want to use ZINCGRIP for this purpose:

Name _____

Firm _____

Address _____

ARMCO
ZINCGRIP SHEETS

AS THE ROLL IS GROUND
...SO THE SHEETS WILL FINISH

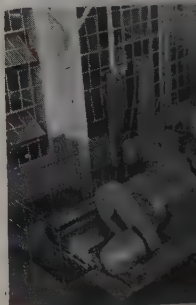


Finish requirements on rolled sheets never slacken. The finish of yesterday that fulfilled the most exacting requirements would not be accepted in any industry today. This rapid rise in the importance of finish specifications is one of the reasons why CINCINNATI Roll Grinders are such an important link in the profitable operation of many sheet mills.

A CINCINNATI Traveling Wheel Head Type Roll Grinder is shown in the illustrations. These machines, built in 36", 44", 50" and 60" sizes, feature . . . exclusive spindle bearings, ordinarily run for years without replacement or adjustment . . . gearless headstock drive, rotates smoothly under roughing or finishing cuts . . . final adjustment of the wheel to the roll through wheelhead trunion mounting, controlled by a handwheel. (At the moment, this operation is engaging the attention of the operator above.)

A complete description of the CINCINNATI Traveling Wheel Head Roll Grinders is contained in a new catalog, G-427. Write for a copy.

CINCINNATI GRINDERS INCORPORATED
CINCINNATI, OHIO, U. S. A.



LEADER



Comments

Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.

Highways To Prosper

or:
ars ago the word "boon-
became part of the vo-
almost every American.
ggle" was to create em-
by invention of work
as little real utility as
egging or braid on an of-
orm.

However, we are beginning
more realistic view of the
Unemployment is still the
b. 1 economic problem.
t on make-work schemes
best, only a temporary
n of our difficulties.

Therefore, essential that we
solution which will con-
provide employment long
federal government has
ing money from the na-
ury into public projects.

solution should give the
lic its full money's worth
dollar expended to end
ent. As a cure for our
ent problem, as well as
to this country's other
omic ills, a program of
highway construction
both requirements.

boondoggling will never
to road building. Every
ended for the improve-
highway system brings
old return in social, eco-
cultural benefits. A few
Germany started construc-
super-highway system to
its economic ills. When
efits of such a program
ed, it was decided that
unds of Germany should
in highways, not only
pose of gaining the nu-
efits that result from the
n of better roads, but

mainly as an important step in
working out its unemployment prob-
lem.

The explanation is simple. If a
thousand men are utilized to build
a highway, long before the high-
way is completed, filling stations
will open up, augmented by ga-
rages, supply houses, salesrooms,
service stations, etc. Restaurants
and hotels will be constructed.

A little later, farms will be culti-
vated and farmers will transport
their produce to market on newly
purchased trucks. Bus routes will
be established and growth of en-
tire communities will be encour-
aged. The result is evident. In
addition to the thousand men origi-
nally employed to construct the
road, demands for additional labor
have been stimulated and the in-
centive for outside agencies to in-
vest additional funds has been pro-
vided. Employment of a thousand
men to build a road eventually
brings about creation of jobs for
many additional thousands.

This was undoubtedly the princi-
ple in effect when millions of men
were put to work as a result of
Germany's super-highway program.
With America's superior resources,
we will harvest even greater suc-
cess from a similar program. At
its completion, we will not have
merely a temporary surcease from
economic disabilities. We will have
provided for permanent employment
of millions in the industries and
enterprises that are always the out-
growth of highway construction. We
will have provided peace-loving
America with a national system of
highways to serve its traveling citi-
zenry with increased safety.

CHARLES M. UPHAM
*Engineer-Director,
American Road Builders' Assn.,
Washington.*

Defines His Position

To the Editor:

My attention has been called to
your issue of March 13, page 27, in
which I am quoted as saying in the
hearings on the basing point prac-
tice in the steel industry before the
monopoly committee: "The steel
fabricators have been treated as
fairly as they could by any one. . ."

The quotation is both inaccurate
in its wording and so removed from
the original context that a quite
false impression is given of my
meaning. What I said, in speaking
of the fabricators, was this (see
"Verbatim Report of the Proceed-
ings of the T. N. E. C. for March 7,
1939," page 328): " * they are prob-
ably treated as fairly *by that corpo-
ration* as by any other that they
could have any dealings with." The
phrase "that corporation" refers to
the United States Steel Corp., and
the context shows that I was not
saying broadly that the fabricators
were being fairly treated by the
basing point practice. On the con-
trary, I cited testimony regarding
the Pittsburgh-Plus system that it
"broke the backs of the fabricators
in the West" and declared that it
was "about equally oppressive in the
East."

The purpose of my statement
was merely to make it clear that
although the Pittsburgh-Plus com-
plaint which resulted in the cease-
and-desist order of 1924 was directed
only against the United States Steel
Corp., I was not suggesting that the
Corporation treated its customers
any less fairly (or more unfairly)
than did the other steel producers.
That was the only significance in a
statement of quite minor and in-
cidental importance.

FRANK ALBERT FETTER
Princeton, N. J.

BRIGHT ANNEALING TUBING



Bright annealed tubing—uniform in finish and anneal—is produced, continuously, in the above EF gas fired recuperative type radiant tube special atmosphere furnace.

This is one of several sizes and types of electric and fuel fired furnaces we have built for bright annealing ferrous and non-ferrous tubing in both coils and straight lengths. We build them in sizes for any production.

Send for data on this and other interesting installations.

Other EF controlled atmosphere installations include furnaces for bright and clean annealing various ferrous and non-ferrous products including wire, strip, sheet, stamping and other products—furnaces for copper bright scale-free heat treating and annealing for scale or decarburization, as well as furnaces for various types for normalizing, short cycle leaching, nitriding, carburizing, enameling, billet heating, heating for forging and other processes.

Submit your furnace problems to EF engineers.

We build Gas Fired, Oil Fired and Electric Furnaces—For any Product, Process or Production

The **ELECTRIC FURNACE**
ELECTRIC & FUEL FIRED
Furnaces
SALEM, OHIO

STAFF

J. SHANER
Editor-in-Chief
 W. KREUTZBERG
Editor
 J. HAIN
Managing Editor
 F. ROSS
Advertising Editor
 HUBBARD
Tool Editor
 S. CADOT
Editor

ASSOCIATE EDITORS

J. D. KNOX
 G. W. BIRDSALL
 CAMPBELL
 New York

B. K. PRICE
 BROWNE
 Chicago
 J. F. POWELL
 Washington
 L. M. LAMM

London
 DELPONT

EDITORIAL STAFF

O. HAYS
Business Manager
 I. BAILEY
Circulating Service
 E. W. KREUTZBERG
 B. C. SNELL
 S. H. JASPER
 L. C. PELOTT
 R. C. JÄENKE
 D. C. KIEFER

V. ZUBER
Production Manager

EDITORIAL OFFICE

Cleveland, Ohio

EDITORIAL OFFICES

110 East 42nd St.
 Peoples Gas Building
 1800 Koppers Building
 10 Stephenson Building
 National Press Building
 282 Sinton Hotel
 1100 Norwood Ave.
 Tel. Glencourt 7559
 Caxton House
 Westminster, S.W. 1
 N.W. 40, Roonstrasse 10

Penton Publishing Co.,
 Cleveland, Ohio. JOHN A.
 of Board; E. L. SHANER,
 Editor; J. R. DAWLEY and
 Assistants; F. G. STEINEBACH,

Bureau of Circulations; Asso-
 ciates Inc., and National Pub-

Subscription in the
 Mexico and Canada, one
 \$8; European and foreign
 \$10. Single copies (current

Address matter at the postoffice
 the Act of March 3, 1879.
 the Penton Publishing Co.

STEEL

ESTABLISHED 1882

Contents

Volume 104—No. 21

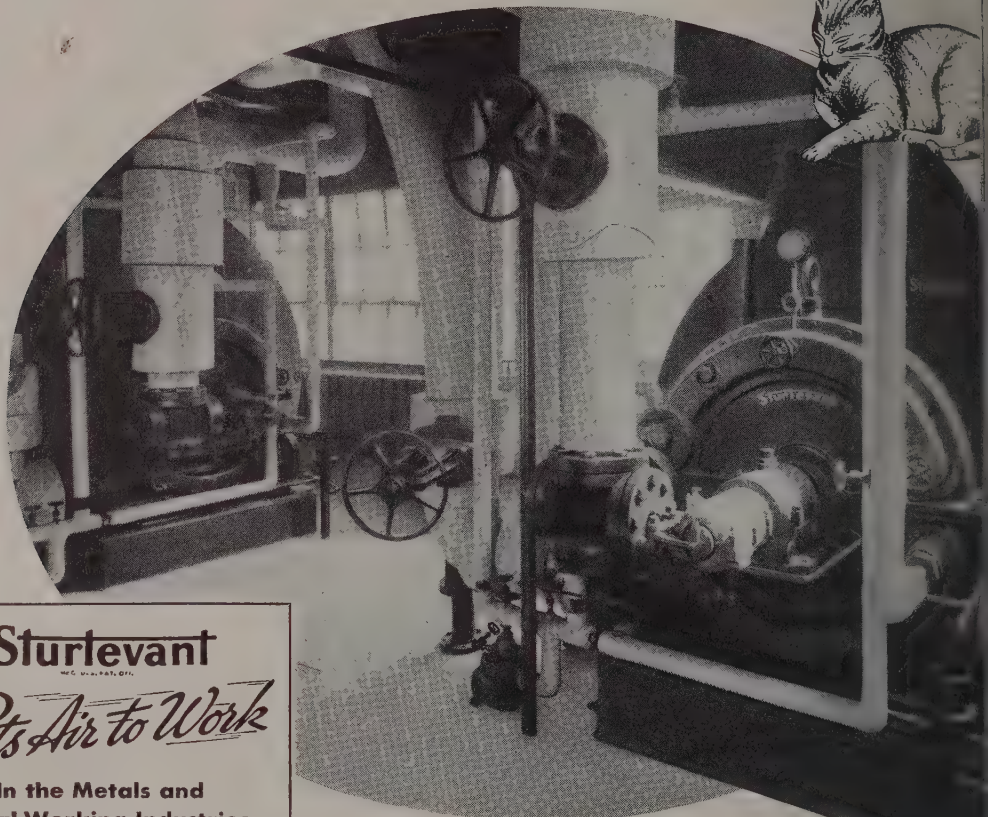
May 22, 1939

| | |
|---|-------|
| READER COMMENTS | 17 |
| AS THE EDITOR VIEWS THE NEWS..... | 21 |
| NEWS | |
| Large Attendance Features Foundrymen's Convention..... | 23 |
| Gray Iron Group Elects Officers..... | 25 |
| Financial News of Steel Industry | 26 |
| Gearmakers Initiate Statistical Service on Course of Business..... | 27 |
| Steelworks Operations for Week | 29 |
| Men of Industry | 30 |
| Obituaries | 31 |
| Aviation | 35 |
| Contribute to American Iron and Steel Institute's Technical Session.... | 40 |
| Chain and Cable Company Shows How Industry Serves Mankind..... | 41 |
| Steel "Deficiency" 250,000,000 Tons, Estimated for Warehouse Group.. | 42 |
| Activities of Steel Users and Makers..... | 78 |
| WINDOWS OF WASHINGTON | 31 |
| MIRRORS OF MOTORDOM | 37 |
| EDITORIAL—Fireproof Construction Makes Progress..... | 44 |
| THE BUSINESS TREND | |
| Index Drifts to Lower Level; Sentiment Improved | 45 |
| Charts and Statistics | 45-47 |
| FORUM ON RE-EMPLOYMENT | 48 |
| TECHNICAL | |
| Power Control | 50 |
| Better Foundry Practices Improve Castings Quality..... | 69 |
| British Institute Research Work Presented..... | 72 |
| MATERIALS HANDLING | |
| Cupola Charging | 56 |
| METAL FINISHING | |
| Pickling Process | 58 |
| JOINING AND WELDING | |
| Welded Unit Heaters | 62 |
| PROGRESS IN STEELMAKING | |
| New Tin-Plate Mill | 66 |
| NEW METAL PRODUCTS | 74 |
| HELPFUL LITERATURE | 75 |
| MARKET REPORTS AND PRICES | 81 |
| The Market Week | 82 |
| BEHIND THE SCENES | 94 |
| CONSTRUCTION AND ENTERPRISE..... | 100 |
| INDEX TO ADVERTISERS..... | 106 |



CTION • PROCESSING • DISTRIBUTION • USE

JUST A CONTENTED P-U-R from Sturtevant Centrifugal Compressor



Sturtevant *Puts Air to Work*

In the Metals and Metal Working Industries

1. Central and Unit Heating Systems.
2. Sheet and Plate Storage Heating and Conditioning Systems.
3. Power Roof Ventilators.
4. Billet Grinding Exhaust Systems.
5. Galvanizing Pot and Pickling Room Exhaust Systems.
6. Foundry Shake Out Exhaust Systems.
7. Grinding and Buffing Wheel Exhaust Systems.
8. Fume Exhaust Systems, Rubber Coated and Non-Corrosive Fans.
9. Cupola Blowers and Centrifugal Compressors.
10. Centrifugal Compressors for Heat Treating and Annealing Ovens.
11. Unfused Melt Recovery Systems for Continuous Submerged Arc Welding.
12. Sheet and Motor Cooling Systems.
13. High Temperature Fans for Normalizing Furnaces.
14. Gas Boosters for Blast Furnace Gas.
15. Air Blankets for Furnace Doors.
16. Mechanical Draft Fans.
17. Fuel Economizers and Air Heaters.
18. Steam Turbines.
19. Vacuum Cleaning Systems.

Sturtevant Design 14 Compressor driven by Sturtevant Steam Turbine. Compressor operates at 26,000 c.f.m., 50" pressure, 2400 r.p.m. Turbine horse power—280.

Exceptionally quiet in operation—and many other advantages

THERE is no annoying high-pitch note from this Sturtevant Centrifugal Compressor. It p-u-r-r-s along—with merely a low business-like hum. We believe it is one of the quietest units built. A special noise-eliminating diffuser in the housing does the trick.

Note, too, how the wheel of the compressor shown is overhung on the Sturtevant Steam Turbine Shaft. Two bearings and a coupling eliminated—and this means simplicity, less wear, reduced maintenance.

B. F. STURTEVANT COMPANY, HYDE PARK, BOSTON
Sales Offices in 40 Cities

B. F. Sturtevant Co. of Canada, Ltd.—Galt, Toronto, Montreal

Other outstanding Compressor features are rugged construction; (2) compact design; (3) ready access to parts; (4) constant pressure practically complete volume; (5) high efficiency.

Sturtevant Centrifugal Compressors are available for a wide range of industrial applications—1½ to 5 lbs. Capacities—100 to 26,000 c.f.m. Write for catalog to learn of their many advantages.

WORLD'S LARGEST MAKER OF AIR HANDLING EQUIPMENT

STEEL

PRODUCTION • PROCESSING • DISTRIBUTION • USE

the Editor s the News

ERMATH of the recent price-cutting steel sheet and strip market finds a good news covered for a considerable period (p. 81) protected practically to the year. New business is off in some direction the price situation again is more stable, but others still are skeptical. Steel production has moved off 1.5 points (p. 29) to 45.5 per cent capacity, but signs point to a little recovery to this decline in the near future. Production is better than expected in many instances, automobile assemblies last week reported an unexpected gain of nearly 8000 tons (p. 88) has distributed over 100 tons of corrugated galvanized sheets

...
n "What's the Matter with Business", R. E. president, Crucible Steel Co. of America, warehouse industry last week (p. 42) that uncertainty is the greatest enemy of all business. "Today economic totalitarianism and industrial democracy are having their tussle," he said, "and permanent revival cannot be expected until we have confidence that industrial democracy will win." Owen D. Young, chairman, General Motors, testifying before the temporary national committee (p. 32), called upon the industry to abandon its "threatening" attitude and adopt a policy of encouragement and revision (p. 34) is gaining ground in its final nature still is in doubt.

...
The steel industry are focused on the forty-first annual meeting of the American Iron and Steel Institute, to be held on Thursday in New York.

Four papers (p. 40) will constitute the technical program ... In addition to summing up the recent financial history of United States Steel Corp., Edward R. Roybal, chairman, told the temporary national committee that his company (p. 32) is expanding with a mill designed to produce extreme-

ly thin stainless steel strip for wing and fuselage covering of airplanes ... Transfer of tooling from an old to a new machine tool, in order to save 10 to 15 per cent in cost, was condemned (p. 28) at last week's convention of the American Gear Manufacturers' association. Such practice cuts production on the new machine up to 50 per cent.

• • •

Industry sees new frontiers and is eager to build new plants, re-equip old ones, make new products, hire more men, says this week's contributor to STEEL'S

Reducing Costs

Forum on Re-employment (p. 48), H. W. Prentiss Jr., president, Armstrong Cork Co., and a vice president of the National Association of Manufacturers. Needed to induce such expansion is encouragement of the hope of earning a profit on capital invested in industry. ... Greatly reduced costs in steel mills, says one authority (p. 50), can be had by studying and controlling demands for power; he describes the methods for obtaining such savings. ... An unusual pickling process, developed in Europe, is being used here to clean surfaces of oil and water storage tanks (p. 58) to improve paint adhesion and increase service life.

• • •

For the first time scientific controls have been applied to production of steel by the bessemer process. Photoelectric cells (p. 54) are employed to determine the "end point." The method is regarded as materially enhancing the economic and commercial value of the bessemer process. ...

Improving Bessemer

Mechanization of cupola charging, according to one student, represents a way to reduce foundry costs (p. 56), thus compensating for rising material and labor costs. ... A manufacturer of centrifugal fan unit heaters (p. 62) gets excellent results by using a welding technique sufficiently flexible to take care of all application variables. ... Quality of castings is being improved through better foundry practice, it was revealed (p. 69) at last week's annual convention of the American Foundrymen's association.

EC Krenzberg



Play Safe Use Ryerson Certified Steels

Reduce failures . . . eliminate spoilage . . . and get better results at lower cost by using Ryerson Certified Steels—steels that represent the highest quality obtainable in each different classification.

In Ryerson Certified Steels you are assured the utmost uniformity—freedom from hard spots—desirable bending and fabricating characteristics that reduce shop labor costs and help produce sound dependable jobs in less time.

On alloy steels where results are dependent on heat treatment, Ryerson selects whole heats of each analysis—tests and actually heat treats bars to determine their response—then compiles complete data to guide the heat treater in securing the

best possible results. He does not have to guess or take chances. He knows the characteristics of each bar of steel with which he

Ryerson Certified Steels also includes tool and stainless steels that meet standards of uniformity and quality—a safe, sure way of getting maximum value for your steel dollar.

Let us send you the Ryerson Stock List showing the full range of Certified Steels—and sizes—carried in stock for immediate delivery. Write to: Joseph T. Ryerson & Son, Inc. Plant Office, Milwaukee, St. Louis, Cincinnati, Detroit, Philadelphia, Buffalo, Boston, Philadelphia.

Attendance Features Forty-Third Annual Foundrymen's Convention

in economic and technical the foundry industry at a high level, despite the business situation. The volume of orders for this was demonstrated at the American Foundrymen's forty-third annual convention in Hotel Gibson. More than 1500 registered high for non-exhibit

from which extended over five days of the week featured on steel, gray iron, and nonferrous branches of production; a four-period and a three-period lecture series on materials, laboratories, sand research, training, apprentice training, analysis and costs; numerous and committee meetings and the annual meeting and the

organized inspection trips to Cincinnati Milling Machine Co. plant on May 15, and to the blast furnaces and the Hamilton Coke & American Rolling Mill Co. on May 18. In addition, the Cincinnati district were open to visitors. Registration was opened Monday morning at which President, vice president and manager, Birdsboro Steel Works, Birdsboro, Pa., president Seyler, Lunkenheim

er Co., Cincinnati, and general chairman of the local committee greeted visiting foundrymen. Extending an official welcome, Mayor James G. Stewart said he hoped the convention would be a factor in restoring business stability and prosperity; that it would play a part in bringing back conditions in which every man would have the opportunity to carve out his own destiny instead of being an object of charity or member of an army dependent on the dole.

Presents Awards Address

Addressing the meeting on the subject "Business Management Has a Job," Fred H. Clausen, president, Van Brunt Mfg. Co., Horicon, Wis.; vice president, Chamber of Commerce of the United States, and for several years chairman of its federal finance committee, stated that "the job of management has been broadened and extended to include all phases of national life. It is not limited to the responsibilities we have assumed toward workers and stockholders, but includes the public and government itself."

Mr. Clausen had been selected the second speaker in a series of annual

addresses sponsored by the A. F. A. board of awards, purpose being to provide the membership with discussions of public and nontechnical problems.

"Business is getting tired of the role of 'Whipping Boy' for our economic shortcomings," he declared. In 1932, with millions unemployed, the new administration assumed the role of deliverer and assumed an impotence on the part of management founded on a charge that industry had created the conditions that brought the depression.

"In employment relations," he continued, "it (the government) accepted the preamble statement of the American Federation of Labor that the relation of manager and worker is inherently one of hostility and therefore a program of collective action must be ordained to take from management the things that labor should possess."

"This position has brought industrial management into disrepute because the public generally does not understand our attitude. Intelligent managers have never questioned the right of collective bargaining. Management generally would be willing to go along with unionism if labor and government will accept a few fundamentals that should control industrial relations:

1. Relationship of employer and worker is inherently one of co-operation and not of hostility.

2. Wages paid must be related

■ More than 400 attended the American Foundrymen's annual dinner in Cincinnati Wednesday, May 17. Presentation of three gold medals for distinguished service to the industry featured the program



to work done, more pay for less work as a slogan is economically wrong.

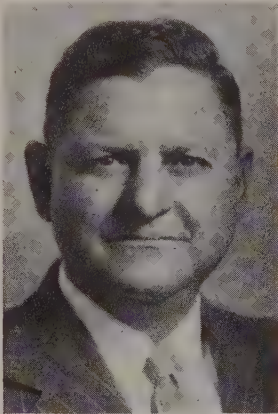
3. Right to work shall not be denied any man because of membership or nonmembership in any labor organization.

4. Right to strike and leave work shall be accompanied by lawful picketing only, free from violence and intimidation.

5. Sit-down strikes are intolerable.

6. All parties to labor agreements must accept legal and moral responsibility for their acts."

Referring to the Wagner act and wages and hours law, Mr. Clausen stated the only course is for business to use its influence for amendment and modification so as to make the enactments workable and protect the rights of workers and man-



Lester N. Shannon

Elected vice president, American Foundrymen's association

agement alike. Commenting on unemployment compensation, he said this must justify itself as a form of dismissal wage and not as a dole or poor relief.

Devoting a considerable portion of his address to federal taxation, Mr. Clausen declared this to be the most important problem looming on the horizon of national affairs. He condemned pump priming as "defeating the very purpose for which it was contrived." The people of this nation must soon decide which way they want to go.

Henry S. Washburn, president and treasurer, Plainville Casting Co., Plainville, Conn., was elected president to succeed Mr. Post. He served the association as vice president during the past year.

Born in Brooklyn, N. Y., Mr. Washburn received his early education in St. Paul's school, Garden City, N. Y., then attended Yale university. His first commercial position was as bookkeeper with the Corn Exchange Bank of New York. From 1906 to 1917 he held various

positions as clerk, credit man, and office manager with the D. L. & W. railroad, H. B. Claflin Co., and Butler Bros., New York. From 1917 to 1921, he was purchasing agent, Turner & Seymour, Torrington, Conn., leaving this post for his present connection.

Mr. Washburn has been active in the A.F.A. for many years, also in local foundrymen's associations in the Connecticut and New England districts. He is a member of the National Founders' society and Gray Iron Founders' society.

Lester N. Shannon, vice president, Stockham Pipe Fittings Co., Birmingham, Ala., and a director of the association, was elected vice president for one year. Born in Carbon Hill, Ala., he attended public schools there and later Birmingham Southern college from which he graduated with a B.S. degree. Immediately thereafter he became associated with the Stockham company in whose service he has risen to his present position. Mr. Shannon served as first chairman of the Birmingham district chapter, American Foundrymen's association.

New Directors Are Named

Five directors were elected for three years as follows: William B. Coleman, president, W. B. Coleman Co., Philadelphia, and past chairman of the Metropolitan Philadelphia chapter, American Foundrymen's association; Chambers R. Culling, vice president and general manager, Carondelet Foundry Co., St. Louis; Otto A. Pfaff, vice president and general manager, American Foundry Equipment Co., Mishawaka, Ind.; Fred J. Walls, manager of Detroit office, International Nickel Co. Inc.; and Retiring President Marshall Post.

More than 400 attended the annual dinner in Hotel Gibson Wednesday evening. On this occasion the J. H. Whiting gold medal was awarded to James R. Allan, assistant manager, engineering and construction department, International Harvester Co., Chicago; the W. H. McFadden gold medal to Donald J. Campbell, president, Campbell, Wyant & Campbell Foundry Co., Muskegon, Mich.; and the John A. Penton gold medal to Harold S. Falk, vice president and general manager, Falk Corp., Milwaukee. These medals are three of four made possible by a fund established in 1924 through contributions of four past officers of the association whose names are identified with the medals.

The award to Mr. Allan is based on his outstanding service to the association over many years as a committee leader along engineering lines, developing standards for refractories and codes of recom-

mended practices applying suppression equipment, letting a three-year term, he is at present chairman of the A.F.A. industrial hygiene committee and the committee on foundry refractories.

Mr. Allan represents the association on the A.S.T.M. committee on refractories and American Foundrymen's association on safety exhaust systems. He is a member of and past chairman of the committee on foundry survey, which promoted survey of electric power in the foundry.

Mr. Campbell was given



Henry S. Washburn

Elected president, American Foundrymen's association

in recognition of outstanding accomplishments of Campbell & Cannon Foundry Co. manufacturing processes. He has been president of the company since it was incorporated in 1915 and is in charge of development of new processes. His furthering of the foundry art is marked by numerous patents embracing both methods and processes, relating to the automotive industry. The company installed an electric furnace for making special alloy castings, castings, and drums. It developed an interlining cast-iron of sheet steel by fusing the face, producing an ideal face.

Electric furnace production extended after 1931 to the manufacture of camshafts, and alloyed cast brake hubs in combination with Production also embracing department for interlining for cylinders. This foundry to produce a V-8 engine

single cast, a product has been adopted by automobile makers.

Falk received his award in recognition of his leadership in promoting his foundry apprenticeship program. He not only has made a program in his plant but in a state noted for its efforts but has been a leader in this work for numerous addresses at national associations, showing economic and humanitarian possibilities of having training programs in foundries.

As a worker in trade and industry associations, Mr. Falk has served on the board of directors of the Foundry and various boards and committees of the National Foundry Association, Steel Founders' Association of America, and American Society of Mechanical Engineers.

Mr. Falk, past president, Institution of Foundrymen, announced at the dinner that the E. J. Falk Institute of the institute is to be named after Dr. Harry A. Falk, manager of research, National Castable & Steel Castings Institute, in recognition of the research work he has done in the field of malleable iron. Presentation will be made at the dinner, London, June 13, during the annual Foundry congress. The institute has established several departments. Mr. Fox, managing director of Iron Works Co. Ltd., is in charge of the development of the castings in Great Britain. Dr. Schwartz is the third representative of the first American.

For a resume of technical sessions at the convention see pages 69-

Equipment Steady in April

Equipment orders in April declined fractionally from the same month last year. Shipments and unfilled orders increased, according to the Equipment Manufacturers Association, Cleveland. In April 1939:

| | April 1939 | March 1939 | April 1938 |
|------------------|------------|------------|------------|
| Equipment orders | 146.0 | 146.6 | 79.3 |
| Shipments | 131.0 | 128.1 | 93.4 |
| Unfilled orders | 208.6 | 193.6 | 158.2 |
| Unfilled orders | 142.8 | 134.9 | 94.9 |

Sales of mechanical stock by bureau of the census showed 3839 in March, compared with 2561 in February and 2137 in March, 1938. For three months year sales were 9987, compared with 11,931 in the comparable period of 1937.

Gray Iron Group Elects Officers

C. J. Miller, president, Fremont Foundry Co., Fremont, O., was elected president of the Gray Iron Founders' society at the organization's annual meeting in Cincinnati, May 15. R. E. Kucher, vice president, Olympic Foundry Co., Seattle, was named vice president; J. H. Pohlman, president, Pohlman Foundry Co., Buffalo, secretary; and S. C. Mefford, Auburn Foundry Inc., Auburn, Ind., treasurer.

A review of progress in the past year and consideration of future activities featured the meeting. In his report as retiring president, C. R. Culling, vice president, Carondelet Foundry Co., St. Louis, retraced the history of the society and emphasized importance of various activities to members.

He stressed need for greater cooperative effort. If the industry is to progress, it must know more about its own business, educate its market on the properties of gray iron castings; study and apply cost data of the society; and utilize to the fullest the services of the society.

Reviews Society Activities

W. W. Rose, executive vice president of the society, presented a detailed summary of activities in carrying out objectives. Mr. Rose discussed the national advertising of the society during the past year; the monthly bulletin; cost activities; finances; government reports; legislation; membership; research; statistics; etc.

The following were elected directors for three-year terms: Mr. Culling; Mr. Mefford; Mr. Miller; A. L. Katelman, manager, Katelman Foundry & Mfg. Co., Council Bluffs, Iowa; R. D. Phelps, president, Francis & Nygren Foundry Co., Chicago; P. E. Rentschler, president, Hamilton Foundry & Machine Co., Hamilton, O.

Elected to one-year terms were: Mr. Kucher; Mr. Pohlman; D. A. Cullinan, president, Western Foundry Co., Chicago; T. I. Curtin, president, Waltham Foundry Co., Waltham, Mass.; A. C. Denison, president, Fulton Foundry & Machine Co., Cleveland; W. J. Grede, president, Liberty Foundry Inc., Wauwatosa, Wis.; Hugh Martin, president, Detroit Gray Iron Foundry Co., Detroit; W. F. Mosser, secretary-treasurer, W. F. Mosser & Son, Allentown, Pa.; R. J. Redmond, secretary-treasurer, Buckeye Foundry Co., Cincinnati; A. J. Rumely Sr., president, LaPorte Foundry Co., LaPorte, Ind.; W. L. Seelbach, secretary-

treasurer, Forest City Foundries Co., Cleveland; Edgar Spencer, treasurer, Philbrick-Booth & Spencer Co., Hartford, Conn.

METAL TRADES CONVENTION TO HEAR TURNER, HEIL

National Metal Trades association will hold its forty-first annual convention May 24-25 in the Palmer House, Chicago. Speakers at the annual dinner Wednesday evening, May 24, include Col. Roscoe Turner on "Speed in Aviation" and Gov. Julius P. Heil of Wisconsin on "Partners—Men and Management."

Other scheduled speakers include: "The Use and Application of Job Rating," A. L. Kress, National Metal Trades association; E. L. Berry, assistant general manager, Link-Belt Co., Chicago; and Howard Goodman, vice president, Goodman Mfg. Co., Chicago.

"Adventures in Electricity," Dr. Phillips Thomas, Westinghouse Electric & Mfg. Co., Pittsburgh; "Stand on Your Rights and Go Ahead," David R. Clark, Fyffe & Clark, Chicago; "Member Interest in Employee Hospitalization," Dr. Otto P. Geier, Cincinnati Milling Machine Co., Cincinnati; "What Is Happening in Washington," John W. O'Leary, chairman, U. S. Chamber of Commerce executive committee, Washington.

Association's committee will report on merit rating or employee analysis. O. D. Reich, Dexter Folder Co., Pearl River, N. Y., is committee chairman.

METAL MINING INDUSTRY TO MEET IN SALT LAKE CITY

Sixth annual Metal Mining convention and exposition of the Western division of the American Mining congress will be held in Salt Lake City, Utah, Aug. 28-31. Each year this meeting attracts greater interest; attendance at the convention in Los Angeles totaled over 2000.

Coal Suspension Reduces April River Shipments

Affected by reduced coal shipments, river tonnages in the Pittsburgh district dropped during April. Totals are lowest in many months, although the decline was not particularly marked in products not directly affected by mine shutdowns.

Totals:

| | Steel Products (tons) | | |
|------------------------|-----------------------|------------|------------|
| | April 1939 | March 1939 | April 1938 |
| Allegheny .. | 5,950 | 3,200 | 5,250 |
| Monongahela .. | 55,850 | 64,450 | 51,780 |
| Ohio | 110,950 | 125,500 | 82,200 |
| Total Shipments (tons) | | | |
| Allegheny ... | 100,600 | 199,300 | 155,547 |
| Monongahela | 348,100 | 1,741,600 | 1,183,905 |
| Ohio | 469,350 | 1,114,150 | 735,125 |

FINANCIAL

CLEVELAND-CLIFFS FIRST QUARTER DEFICIT LARGER

■ CLEVELAND-CLIFFS IRON CO., Cleveland, reports net loss of \$128,795 for first quarter. Net loss of \$70,470 was incurred in first quarter, 1938. Some of the expense of recent financing chargeable to 1939 earnings fell in the first three months. Earnings of Cliffs Corp., holding company, for the first quarter amounted to \$45,528, compared with \$93,084 in initial 1938 quarter.

DIVIDENDS DECLARED

Monarch Machine Tool Co., Sidney, O., 20 cents on common, payable June 1 to record May 22. On March 1 dividend of 35 cents was paid. The company has three months order backlog.

Standard Steel Spring Co., Coraopolis, Pa., 50 cents on capital stock, payable June 1 to record May 26. One dividend was paid in 1938, amounting to 40 cents on Dec. 30.

Simonds Saw & Steel Co., Fitchburg, Mass., 20 cents on common, payable June 15 to record May 27. In previous quarter 10 cents was paid.

Niles-Bement-Pond Co., Hartford, Conn., dividend of 1 share of United Aircraft Corp. stock for each 20

shares of Niles-Bement-Pond Co.'s stock, payable June 15 to record June 5. Including 50-cent cash dividend already paid, this stock distribution will bring disbursements this year to \$2.40 a share. Last year cash payments totaled \$2 a share.

Johns-Manville Corp., New York, regular quarterly of \$1.75 on 7 per cent preferred, payable July 1 to record June 16.

Jaeger Machine Co., Columbus, O., 25 cents on common, payable June 1 to record May 22. In 1938 one dividend of 50 cents was paid, Nov. 23.

Keystone Steel & Wire Co., Peoria, Ill., 15 cents on capital stock, payable June 15 to record May 31. Payment of 20 cents was made on April 15 and 10 cents Feb. 1.

Chicago Rivet & Machine Co., Chicago, 10 cents on capital stock, payable June 15 to record May 27. Like amount paid March 15.

Budd Wheel Co., Philadelphia, regular quarterly \$1.75 on 7 per cent preferred, payable June 30 to record June 16.

Mesta Machine Co., Pittsburgh, 25 cents on capital stock, payable July 1 to record June 16. Previous payment was 50 cents April 1.

International Harvester Co., Chicago, quarterly of 40 cents on common, payable July 15 to record June 20. Like amount was paid in preceding quarter.

Thew Shovel Co., Lorain, O., regu-

lar quarterly of \$1.75 payable June 15 to record June 5. No action was taken on dividend.

Colt's Patent Fire Arms Co., Hartford, Conn., regular of 50 cents on common, payable June 30 to record June 15.

Chicago Flexible Sheet Co., Chicago, extra of 25 cents on common, payable June 30 to record June 15. Extra was paid March 30.

Industrial Research Complete "Science"

■ Industrial Research Institute members and guests completed a "science travel" tour of industrial plants and laboratories, culminating in the institute meeting in Washington.

Tour started at Canonsville, Pa., with an inspection of the Co. plant and laboratory. Following day, the research pilot plant, laboratories, continuous sheet-strip mill, and Laughlin Steel Corp. plant, and on May 18, the station of Hercules Inc., Wilmington, Del.

H. W. Graham, general manager of Jones & Laughlin Steel Corp., is chairman of the institute's committee.

Chickasaw Village By Tennessee Co.

■ Chickasaw village, near Chickasaw, Ala., has been sold by the Coal, Iron & Railroad Co. to Chickasaw Co. Inc. It was to be for employes of Chickasaw building & Car Co., but the Tennessee company's negotiations were discontinued after completing 14 buildings and in November, 1938, building facilities were transferred to Shipbuilding Corp., Mobile, Ala., powerhouse at Chickasaw, Ala., in January of this year.

The sale follows the plan of the United States Steel Corp. of surplus properties to manufacture of steel. The Tennessee company will retain stream barge terminal facilities in the Chickasaw area.

■ Fabricated steel plant at Chickasaw, Ala., in March totaled 29,784 tons, compared with 22,903 tons in March 1938 and 38,052 tons in March 1937. The bureau of the census reported that in the first quarter orders were 79,301 in first quarter last year and 145,044 for the period

More Earnings Statements from Consumers

■ TOTAL net income of 142 companies among equipment manufacturers, suppliers and consumers in the first quarter aggregated \$38,557,243, or 175.4 per cent over the \$13,998,917 net income reported by them in the first quarter last year. The following table lists 27. Prior tabulations were presented in the following issues: April 24, p. 19; May 1, p. 16; May 6, p. 21. Thirty of the 142 companies recorded a loss in the first quarter, while 68 had a deficit in the same period last year. All figures are net income, except where asterisk denotes loss.

| | First Quarter 1939 | First Quarter 1938 | First Quarter Income Common 1939 | Per Share 1938 |
|--|-----------------------|-----------------------|---|----------------------|
| Addressograph-Multigraph Corp., Cleveland..... | \$259,831 | \$309,813 | \$0.34 | \$0.41 |
| Air-Way Electric Appliance Corp., Toledo..... | 261 | 26,516* | 0.07* | 0.14* |
| American Radiator & Stand. Sanitary Corp., N. Y. | 126,579 | 649,597* | 0.004 | 0.07* |
| American Steel Foundries, Chicago..... | 104,207* | 378,424* | 0.09* | 0.32* |
| American Stove Co., St. Louis..... | 102,330 | 191,827* | 0.19 | 0.36* |
| Art Metal Construction Co., Jamestown, N. Y..... | 78,513 | 182,508 | 0.26 | 0.61 |
| Atlas Drop Forge Co., Lansing, Mich..... | 8,629 | 27,868* | 0.06 | 0.19* |
| Babcock & Wilcox Co., New York..... | 512,690* | 730,564* | 0.76* | 1.09* |
| Cincinnati Ball Crank Co., Cincinnati..... | 5,448* | 23,126* | 0.07* | 0.27* |
| Chapman Valve Mfg. Co., Indian Orchard, Mass.... | 23,546 | 231,969 | 0.11 | 1.59 |
| Chicago Pneumatic Tool Co., Chicago..... | 185,219 | 221,284 | 0.02 | 0.12 |
| Electromaster Inc., Detroit..... | 63,614* | 51,220* | 0.33* | 0.26* |
| Fairbanks Co., New York..... | 3,961* | 8,358* | 1.01* | 1.08* |
| Federal Screw Works, Detroit..... | 14,005* | 57,012* | 0.20* | 0.42* |
| General Steel Castings Corp., Eddystone, Pa..... | 414,685* | 206,609* | 1.24* | 0.78* |
| Hercules Motors Corp., Canton, O..... | 124,024 | 6,440 | 0.40 | 0.02 |
| Motor Wheel Corp., Lansing, Mich..... | 420,405 | 69,416* | 0.49 | 0.08* |
| Murray Corp. of America, Detroit..... | 13,941 | 90,937* | 0.01 | 0.09* |
| National Supply Co., Toledo, O..... | 232,980* | 1,094,854 | 0.68* | 0.47 |
| Pullman Inc., Chicago..... | 768,281 | 428,552 | 0.20 | 0.11 |
| Rheem Mfg. Co., Richmond, Calif..... | 109,020 | 126,000 | 0.36 | 0.42 |
| Superheater Co., New York..... | 181,972 | 74,451 | 0.20 | 0.08 |
| Vulcan Corp., Portsmouth, O..... | 57,490 | 50,484 | 0.17 | 0.13 |
| Walworth Co., New York..... | 48,368* | 368,118* | 0.04* | 0.29* |
| Weston Electrical Instrument Corp., Newark, N. J. | 52,806 | 57,028 | 0.24 | 0.27 |
| White Sewing Machine Corp., Cleveland..... | 113,017 | 41,964 | 0.07 | 0.29* |
| Worthington Pump & Mach. Corp., E. Harrison, N. J. | 214,490* | 239,665 | 1.54* | 0.27 |

Makers Initiate Statistical View on Course of Business

A BALANCED program of industrial and economic papers was presented at the twenty-third annual meeting of the American Gear Manufacturers Association at Virginia Beach, May 15-17.

Statistical service is being given by the association and it was pointed out by President Howard Dingle, Cleveland, in his address to the session. One of the pre-occupations was on view, the "right line"—being that for 1938, which was a typical year in the gear business.

He pointed out that inasmuch as the gear industry penetrates practically every branch of life, the index of its activity is an extremely valuable indicator to industry as a whole. He called attention to the sharp nose-dive which marked the American industry in 1932. The 1939 trend has recently shown a definite upward turn. With the domestic political swing marked as "right," Mr. Dingle predicted that the 1939 trend will continue upward unless further economic scares abroad or an unexpected outburst of domestic unrest intervene.

Mr. Dingle's conclusions were confirmed by Manager-Secretary J. C. Marthens in his discussion of the "right line" index.

U. S. Goedke, president, General Gear Co., Chicago, was elected president of the association to

succeed Mr. Dingle. U. Seth Eberhardt, vice president, Newark Gear Cutting Machine Co., Newark, N. J., was named vice president; and R. S. Marthens, manager, gear division, Nuttall Works, Westinghouse Electric & Mfg. Co., Pittsburgh, treasurer.

Elected members of the executive committee were: Mr. Goedke; Mr. Marthens; D. W. Diefendorf, vice president, Diefendorf Gear Corp., Syracuse, N. Y.; John H. Flagg, president, Watson-Flagg Machine Co., Paterson, N. J.; and F. H. Fowler, president, Foote Bros. Gear & Machine Corp., Chicago.

J. C. McQuiston, 701 Shields building, Wilkesburg, Pa., remains as manager-secretary.

National Defense Considered

"Industrial Mobilization" was the theme of the annual dinner, May 16, at which President Dingle was toastmaster. Principal speakers were: Col. Harry B. Jordan, ordnance department, Nansmond ordnance depot, Portsmouth, Va.; and Hartley W. Barclay, editor, *Mill and Factory*, New York.

Col. Jordan, who has just completed four years as director of the army industrial college, Washington, explained the manner in which the American industry is tied in with the present program of national defense. He paid warm tribute to the manner in which industrialists generally are co-operating with the war department—mentioning as an ex-

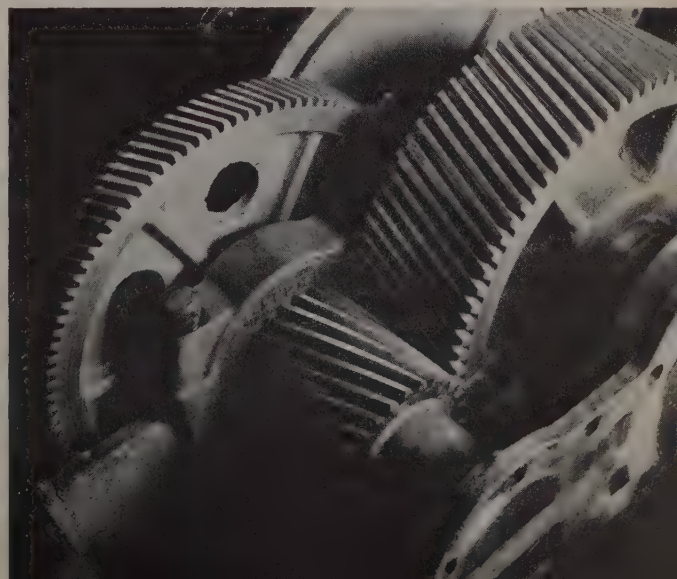
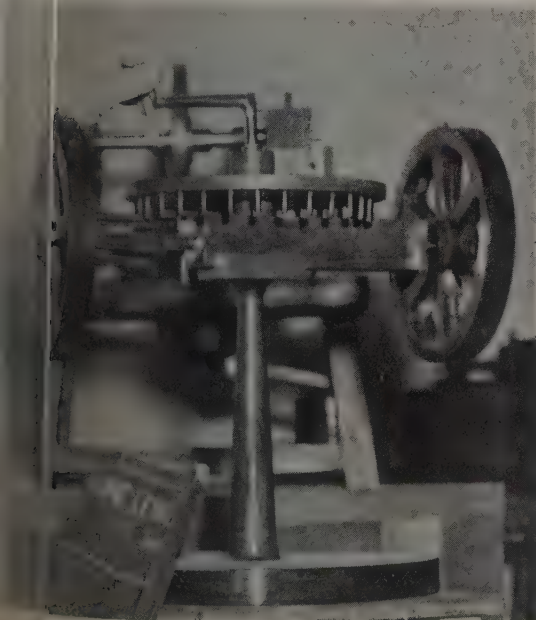
ample the active help given by men such as President Knudsen of General Motors Corp.

Mr. Barclay amplified on the industrial phases of the program described by Col. Jordan, pointing out in particular how the interruption of normal industrial growth and replacement by the depression—and more recently by political experimentation—actually was a weakening factor in national defense as well as in national morale. The surprising degree to which industry immediately should be stimulated and re-equipped, he brought out through statistical analysis.

Presenting a paper on "Modern Drafting Room Practice" at the first technical session, G. R. Martins, drafting supervisor, Falk Corp., Milwaukee, said "a drawing is merely a unit of expression by which the concepts and instructions of the engineer are conveyed to the shop. It must therefore be both lucid and complete—leaving no question as to intent. The degree of refinement considered essential to the product must be defined insofar as is possible. Should the language of the drawing not be clear in this respect, successive units will not match the standards of previous ones and prescribed cost levels will not be maintained. There must be no doubt as to what is being furnished on any job, otherwise there will be no assurance of interchangeability of replacements."

Prof. Frank A. Mickle, University of Michigan, Ann Arbor, Mich., pointed out that the shortcomings of some college graduates as mechanical draftsmen become more understandable when it is realized that under the ordinary system of instruction the average student actually has had only 350 hours of draft-

■ GEARS OLD AND NEW: How mankind has moved forward through the centuries with gears is symbolized by this model of Leonardo da Vinci's original "automatic gear," contrasting with their application in modern industry. Now exhibited in Milan, Italy, the model is one of 200 working restorations of da Vinci's 15th-century inventions, built in a year's time by 22 experts at a cost of \$250,000



ing work in his entire four year engineering course.

Contributing a paper on "Turret Lathe Methods Applied to Small Lot Gear Production," J. R. Longstreet, in charge of tool design for sales work, Warner & Swasey Co., Cleveland, asserted that "25 to 50 per cent of the entire time of manufacture of gears is spent in the turning of gear blanks. There are few manufacturers who could not—with the expenditure of a little ingenuity and planning—increase the productive output of their turning equipment 12 to 15 per cent.

"When you buy a new automobile, you do not transfer the tires from the old one, nor do you transfer any of the various other units from the old to the new. You take it for granted that the automotive manufacturer has produced an article wherein all the component parts go to make up a finished whole. In other words, you allow the engineering ability of the maker to demonstrate itself in a complete assembly.

Old Tooling Transferred

"When buying a machine tool, however, the purchaser—in an effort to save 10 or 15 per cent—often will transfer tooling from an old machine to a new one. Thus he will penalize the production possibilities of the new machine to as much as 50 per cent of the production increase which otherwise would be attained. It is important to remember that a thousand dollar's worth of basic tooling, written off with the machine over a 10-year period, has only to increase production about 7 per cent to pay for itself out of wage savings figured at the rate of 80 cents per hour.

"Every machine tool today should be purchased as an investment in production. If it cannot show a profit, then it has no economic value for the work considered. Be sure, however, that the problem is analyzed fully and from all sides. Otherwise your competitor may know some answers of which you are unaware," Mr. Longstreet said.

D. W. Diefendorf suggested that in view of the facts brought out by the author of this paper, it might be well for the association to have further papers along similar lines, bearing on other machining methods concerned with the production of gear blanks.

In a paper on "Materials for Worm Gear Drives," by C. H. Bierbaum, vice president and consulting engineer, Lumen Bearing Co., Buffalo, dealt particularly with the selection of bronzes for worm wheels and the important influences—both good and bad—which the material and the finish of the worm has on the worm wheel.

According to Mr. Bierbaum, a



Charles F. Goedke

Elected president, American Gear Manufacturers' association

bronze worm wheel, made under proper metallurgical supervision, meets the ideal conditions of a bearing metal—that of being made up of hard and soft crystals. Bronze wheels with varying percentages of lead have been found suitable to run with worms made from different soft steels, not hardened. In certain extreme cases where the worm wheel is subjected to excessive stresses and severe shock and where physical strength is of more importance than the properties of a bearing metal, aluminum bronze with various heat treatments has given excellent results when used with a worm of standard steel heat treated but not case hardened.

As Mr. Bierbaum sees the situation, the metallurgy of bronze worm wheels is in general more simple and better understood than is that of the steel worms which are designed to run with them.

Standards in Wide Use

A session on standardization was held Monday afternoon with T. R. Rideout, Nuttall Works, Westinghouse Electric & Mfg. Co., Pittsburgh, and chairman of the technical standards committee presiding. In emphasizing the importance of the standards committee, Mr. Rideout stated that small companies especially have grown to depend upon the standard practices as proposed by the A.G.M.A. to guide them in their designs.

The matter of nomenclature is still "up in the air." As Mr. Rideout put it, "We have about come to the conclusion that it will be necessary to go right back to the beginning and start all over again." A preliminary draft of "Recommended Practice for Selection of Gear Lubricants" was presented, but in view of the breadth of this subject further work must be done on it. It seemed to be the consensus of opinion that for the time being, gear

and gear set lubricants recommended primarily for strength of proven performance.

Speaking on "Safety" and technical session Monday, E. S. Sawtelle, vice president, Tool Steel Gear & Pinion Co., Cincinnati, said: "Important education and safety campaign in our shops cannot be overdone. There are two major considerations. First, we owe it to our employees to preserve their health and mental faculties. Any industry that fails to safeguard its employees is not deserving of true respect.

"Second, since practical states have some sort of compensation insurance, accidents are expensive to the employer. Any curtailment of accidents will result in decreased profits which probably will result in more money than the employer can spend on the safety campaign.

Must Educate Workers

"Accidents usually are common in a shop handling heavy gears and kindred equipment. The only safeguard is eternal vigilance on the part of management to keep the equipment in perfect condition to supply all necessary reductions; then eternal vigilance which insure that the workers observe all the protections provided of taking chances.

"In a study of 73,000 accidents, lack of mechanical safety was found to be a comparative factor in causing industrial accidents," Mr. Sawtelle related. "Natural causes were to blame in 10 per cent of all these accidents; 90 per cent were unavoidable; 80 per cent were due to personal and supervisory faults. This demonstrates that the man—rather than the machine—is the greatest accident factor, and that through education directed toward the man, the accident rate can best be lowered further."

"Why the Chaotic Price of Steel" Within the Gear Industry made the subject of a paper by Fagan, secretary-treasurer of the Bros. Gear & Machine Co., Chicago. Mr. Fagan not only made a strong plea for sound material cost accounting in the gear industry but he also went into considerable detail in pointing out the mental habits of sound accountants in this industry.

"We are in business to make a profit," said Mr. Fagan. "In this profit we strive with efficiency—regardless of whether the business be one over which we have complete control, or whether we are the stewards for a thousand stockholders. In either case, profit can be made only in the long run—by selling that which we

an its cost of produc-

the costs of produc-
two gear plants in a
the same, is absurd.
differences in cost of unit
the two plants can be
by an analysis of dif-
a few factors such
movement, base wage rates
performance times due
operators and equip-

Dr. J. Mater, assistant chief
Petersburg Rig & Reel
burg, W. Va., dealt with
Gear Reducers to
Piping Service," at the
morning. In this
the other went into great
analyzing the peculiarities
and the many factors—
changes in the condition
within the well itself—
may cause a carefully de-
reduction drive to de-
and even to wreck
completely. The conclusion to
that in view of the
involved, the gear in-
has one extremely well in
and building equipment
to the oil fields.

Hardening Gears by Torch

Hardening of Gear
a subject in which there is
at the present time,
connection with large
conventional hard-
of prohibitive size,
by Dwight Van De
assistant works manager,
Wicks, Rochester, N. Y.

clear idea of the funda-
behind surface harden-
when he explained it in this
—The oxyacetylene flame
as a heating medium in
process. No change in the
composition of the mate-
hardened takes place.
The steel is heated with the
flame to a tempera-
when subsequent quenching—
with water or air, will in-
crease its surface hardness. This
temperature is above the point at
the solid solution of carbon
is formed. The quench-
the carbon dissolved in
the crystal to precipitate
of iron and other metal-
ions, thus producing mar-
structures of considerable

session on Wednesday
Edward J. Wellauer, re-
engineer and metallurgist,
Corp., Milwaukee, pre-
an unusually complete paper
"Metallurgy." He dealt in
subjects such as: The
metallurgist; modern gear ma-
physical properties of gear
forms of these materials;

District Steel Rates

Percentage of Ingot Capacity Engaged
In Leading Districts

| | Week ended May 20 | Change | Same week 1938 | 1937 |
|-------------------|-------------------------|--------|----------------------|------|
| Pittsburgh . . . | 33 | — 3 | 30 | 96 |
| Chicago | 45.5 | — 1 | 29 | 85 |
| Eastern Pa. . . | 37 | None | 27 | 73.5 |
| Youngstown . . | 42 | None | 26 | 80 |
| Wheeling | 53 | —11 | 38 | 94 |
| Cleveland . . . | 50 | + 4.5 | 23 | 82 |
| Buffalo | 37.5 | + 2.5 | 25.5 | 88 |
| Birmingham . . | 57 | + 2 | 63 | 83 |
| New England . . | 45 | None | 30 | 100 |
| Cincinnati . . . | 44 | — 8 | 45 | 90 |
| St. Louis | 39 | —12 | 33.3 | 94 |
| Detroit | 59 | None | 18 | 99 |
| Average | 45.5 | — 1.5 | 30 | 91.5 |

methods of obtaining physical prop-
erties; physical properties of some
gear steels and theoretical considera-
tions.

G. L. Rothrock, rear axle and
transmission engineer, Cadillac Motor
Car division, General Motors
Corp., Detroit, contributed a paper
on "Development of a Smaller Auto-
mobile Transmission." As an ex-
ample of what has been accom-
plished in the automotive field
through theoretical and practical
study of gear problems, the author
described a large transmission which
weighs 150 pounds and which was
used on all Cadillac and LaSalle cars
in 1932 and on all Cadillacs until
recently. This heavy and bulky
mechanism he then compared to a
very much smaller unit weighing 76
pounds, now used throughout the
entire Cadillac-LaSalle line.

"The origin of this latter trans-
mission," said Mr. Rothrock, "was
a still smaller one weighing 67
pounds and designed to transmit 170
foot-pounds torque in a 4000-pound
car. By systematic study of all
loads and deflections, the capacity
of this 67-pound transmission was
increased by 67 per cent to 300 foot-
pounds torque, while its weight was
increased only 13 per cent. It is now
used in a 5500-pound car."

Steel Output Down 63.8 Per Cent in 1938

Production of steel ingots and
steel for castings in 1938 totaled
28,349,991 gross tons, 63.8 per cent
less than 50,568,701 tons in 1937, ac-
cording to the American Iron and
Steel institute. Comparisons for im-
portant products follow:

| | 1938 | 1937 |
|-------------------------|------------|------------|
| Ingots, castings . . . | 28,349,991 | 50,568,701 |
| Hot-rolled steel . . . | 20,985,563 | 36,756,369 |
| Tin, terne plate . . . | 1,617,544 | 2,687,128 |
| Galv. sheets & prod. . | 1,193,667 | 1,434,806 |
| Pipe, tubes | 2,303,985 | 3,823,736 |
| Alloy ingots, cast'gs . | 1,476,384 | 3,032,626 |

Pennsylvania again was the larg-
est producer of hot-rolled steel, with

5,877,802 tons. Of the total hot-rolled
output last year 9,917,923 tons were
flat-rolled, including 4,745,419 tons
of sheets, 1,714,138 tons of plates,
and 1,503,183 tons of strip and sheets
for cold-reduced black plate and tin
plate. Merchant and reinforcing bars
amounted to 3,111,538 tons, wire
rods 2,108,598 tons, shapes 1,859,540
tons, billets for seamless tubes 1-
320,474 tons, and skelp 1,253,161 tons.
Included in tin and terne plate pro-
duction were 1,430,071 tons of coke
and charcoal tin plate.

PRODUCTION

■ STEELWORKS operations last
week dropped 1.5 points to 45.5 per
cent. Small advances were made in
three districts, reductions in five,
and four showed no change. A
year ago the rate was 30 per cent;
two years ago 91.5 per cent.

Youngstown, O.—Held at 42 per
cent; 40 open hearths and three bes-
semers in production. Outlook is
for continuation of this rate this
week. Increased coke production
probably will return a banked blast
furnace to operation early this
week.

Cleveland—Up 4.5 points to 50 per
cent despite curtailment by one in-
terest. A steady or higher rate is
in prospect this week.

Chicago—Off 1 point to 45.5 per
cent, fourth consecutive decline.
Since April 22 the loss has been 8
points.

Detroit—Steady at 59 per cent for
the fifth week.

Birmingham, Ala.—Up 2 points
to 57 per cent as Republic Steel
Corp. lighted one open hearth.
Twelve in the district now are op-
erating.

St. Louis—Three open hearths
were taken off, the district rate
dropping 12 points to 39 per cent.

Central eastern seaboard—Un-
changed at 37 per cent, with indica-
tions for improvement this week.

Pittsburgh—General curtailment
last week lowered the rate 3 points
to 33 per cent. The schedule is un-
likely to be changed this week.

Wheeling—Heavy reduction by
one producer caused loss of 11 points
to 53 per cent.

Buffalo—Slight increase in new
business lifted operations 2.5 points
to 37.5 per cent, one open hearth be-
ing added.

New England—Held at 45 per cent
for third week, no change being in-
dicated this week.

Cincinnati—Down 8 points to 44
per cent. One interest has held a
steady rate. Another will be out
of production a few days, resuming
with several open hearths this week.

MEN OF INDUSTRY

■ GORDON F. HESS, formerly assistant manager of sales, alloy steel division, Republic Steel Corp., Massillon, O., has been appointed sales manager of the Houston, Tex., district, effective June 1. He entered the steel business in 1917 in the metallurgical department of Central Steel Co., which subsequently became a part of Republic. His first major promotion was to assistant superintendent, heat treating and cold drawing department of Central Steel. He then became superintendent of that department, and remained in that capacity until 1922 when he was transferred to the sales division. In 1931 he was made assistant manager of sales, alloy steel division.



Gordon F. Hess

R. W. Leach, chairman, Audley Engineering Co. Ltd., has joined the board of British Rolling Mills Ltd., Tipton, Staffs, England.

John T. Brittain has been appointed district sales manager in Wichita, Kans., for Colorado Fuel & Iron Corp., Denver.

C. K. McCracken, formerly with the American Bridge Co. in its Detroit office, has transferred to the New York office of United States Steel Products Co.

W. D. Wise has been named advertising manager, Fruehauf Trailer Co., Detroit. He joined Fruehauf in 1931 as a member of the sales department.

R. E. S. Geare, formerly vice president in charge of sales and engineering, L. H. Gilmer Co., Philadelphia, has been appointed general sales manager, T. B. Wood's Sons Co., Chambersburg, Pa.

Edward V. Hegg, more than ten years engaged in sales and engineering capacities with Buffalo Foundry & Machine Co., Buffalo, has been promoted to the managership of the company's New York office.

A. W. Keller has been appointed technical sales representative, Maas & Waldstein Co., Newark, N. J., maker of industrial finishes. He formerly served nine years as a sales representative.

M. J. O'Neill has been appointed vice president in charge of sales, Monarch Governor Co., Detroit. He joined the company last December as director of sales, after serving

18 years in the parts and accessory division of Ford Motor Co.

J. W. Savage has been named assistant to C. E. Wilson, executive vice president, General Electric Co., Schenectady, N. Y. For several years he was identified with distribution and commercial research problems of the company's appliance and merchandise department.

Harry J. Leschen, St. Louis, has been re-elected president, National Wire Rope and Strand Manufacturers association. George P. Yamb, Washington, was re-elected executive secretary and counsel, and George C. Moon, New York, was named secretary.

Arthur C. Allshul, Philadelphia plant manager, Joseph T. Ryerson & Son Inc., was tendered a banquet by employees at Penn Athletic club, Philadelphia, May 12. He has just completed his fortieth year with the



Arthur C. Allshul

Ryerson company and employe in point of service started with the company in Chicago. He was manager at Buffalo in that position until 1929, placed in charge at Ph

E. Flynn has retired mine inspector, Tennessee Iron & Railroad Co., Ala., after serving 29 years capacity.

Angus R. Brown, herperintendent of ventilation coal mines department, Mr. Flynn.

George Muscic, the president of the research laboratory at Lea Mfg. Co., Waterbury, has resigned to open a laboratory at 480 Waterbury, serving working and allied industries will be retained by the company as consultant.

H. Y. Bassett has joined of Wolverine Tube Co., research engineer. Prior to the Surface Combustion Co., in 1937, in charge of industrial furnace equipment the nonferrous industry, was associated with the Copper & Copper Co.

William L. Clark, assistant superintendent, Columbia Steel Co., and Samuel W. Jones & Laughlin Steel Co., generating staff at Aliquippa among ten men selected Alfred P. Sloan Foundationships at the Massachusetts Institute of Technology, Mass.

Ira F. Cheney, superintendent, Griffin Wheel Co.'s Detroit will be transferred to Paul as superintendent of the company's larger plant there be succeeded at Detroit Loveland. The past Cheney has been chairman, chapter, American Foundry association.

Oliver E. Mount, secretary, American Steel Foundry, has been appointed of the workmen's committee health and safety committee Illinois Manufacturers' Association. Vice chairmen are J. L. Carnegie-Illinois Steel Co., Hensel, Youngstown Sheet & Co., and Dr. V. S. Cheney & Co.

A. C. Graham, traffic Youngstown Sheet & Co., Youngstown, O., will serve connection with the

retirement June 1, ow-
He has been with
37 years. He will con-
sulting capacity. Wil-
will resign from the
the Pittsburgh, Lis-
railroad and Youngs-
urban railway, to suc-
am as general traffic
sheet & Tube.

He has been appointed
sor, Michigan division,
& Brass Inc., New
headquarters at 5851
avenue, Detroit. Mr.
was acting in a
ing capacity for Tim-
aring Co., in the Phila-
met, which company he
following graduation from
of Applied Science,
1932.

Kirkland has been
ary, Okonite Co., Pas-
and the Okonite-Callen-
e 4, Paterson, N. J., with
at 501 Fifth avenue,
After graduation from
Kirkland spent most
in developing and re-
in the four Okonite
following which he en-
ges field.

He has been appointed as-
e manager, Northwestern
Co., Sterling, Ill., suc-
L. A. White, resigned.
Changes in personnel effec-
H. W. Hill, hereto-
ndent, wire division,
sistant general superin-
M. Murphy, formerly
superintendent of the di-
omoted to superintend-
G. Hotchkiss is named
superintendent. M. E.
general superintendent.

ross, the past six years
advertising for Stewart
p., Chicago, and subsidi-
been promoted to sales
Alemite retail sales divi-
as been with the com-
s, being appointed ad-
anager, Alemite division,
and holding that position
when he became director
ng.
e, who has headed the
ail sales division, will as-
duties in the Stewart-
ganization.

ley, Westinghouse Elec-
Co., Springfield, Mass.,
ed president, Air Condi-
anufacturers' association
meeting May 13, in Hot
a. Other officers: Vice
S. E. Lauer, York Ice
Corp., York, Pa.; treas-

urer, P. A. McKittrick, Parks-Cra-
mer Co., Fitchburg, Mass.; execu-
tive vice president, W. B. Hender-
son, Washington.

Board of directors for the coming
year includes: J. F. G. Miller, B. F.
Sturtevant Co., Boston, chairman;
Stuart Crocker, General Electric Co.,
Bloomfield, N. J.; E. T. Murphy, Car-
rier Corp., Syracuse, N. Y.; J. A.
Harlan, Nash-Kelvinator Corp., De-
troit; J. M. Fernald, Baker Ice Ma-
chine Co., Omaha, Nebr.; F. D.
Kirk, Vilter Mfg. Co., Milwaukee,
and the association's officers.

Albert C. Roeth Jr. has been
named assistant district sales man-
ager at St. Louis, Inland Steel Co.,
Chicago. Mr. Roeth started in the
mill at Indiana Harbor, September,



Albert C. Roeth Jr.

1933, then was transferred to Chi-
cago, where he secured extensive
experience in the order, engineering
and sales departments. The past
two years he has been a salesman
in the Chicago district. Mr. Roeth
succeeds F. A. Ernst, who recently
was transferred to Inland's St. Paul
office as district sales manager.

DIED:

■ H. E. McCLUMPHA, at his home
in Bellevue, Pa., May 13. A former
executive of Keystone Car Wheel
Co. and its successor, Southern
Wheel Co., his invention of the con-
tinuous method of casting chilled
iron wheels on movable platforms,
accurately timed for the heat treat-
ment cycle, has become standard
practice in the industry. At the
time of his retirement in 1930 he
was vice president of Southern
Wheel, now a unit of American
Brake Shoe & Foundry Co.

Melvin H. Williams, 48, a sales
representative in Cleveland for the

Browning Crane & Shovel Co., Cleve-
land, in that city, May 9. He had
been with the company 36 years.

J. Renwick Wilkes, 67, for 46
years partner in the Mecklenburg
Iron Works, Charlotte, N. C., in that
city, April 19.

Hugh Jackson, 62, superintendent
of open hearths, Youngstown Sheet
& Tube Co., Youngstown, O., in that
city, May 10.

Frank C. Robbins, 80, who at one
time operated the Niles Iron & Steel
Roofing Co., and later became presi-
dent, Niles Car & Mfg. Co., Niles,
O., in Cleveland, May 6.

David M. Casterline, 40, in charge
of the experimental and engineering
department of S. F. Bowser & Co.,
Fort Wayne, Ind., in Fort Wayne
recently.

Stephen Uncapher, 50, district
sales manager in Fort Wayne, Ind.,
for the Chicago Hardware Co., in
that city recently.

Charles H. McCowan, 68, former
traffic manager, Alliance Machine
Co., Alliance, O., and chief clerk
for the Pennsylvania railroad at that
point for 28 years, May 11 in Cleve-
land.

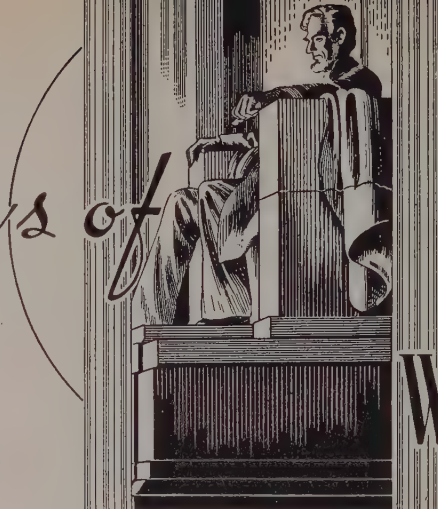
George W. Chormann, 63, for 23
years a foreman at the Republic
Structural Iron Works Co., Cleve-
land, May 10 in that city. Before
joining the company he was with
the former Carnegie Steel Co. more
than 20 years.

Grover H. Tripp, 53, sales man-
ager, Chatham Malleable & Stamp-
ing Co., in Chatham, Ont., May 10.
He formerly was with the Defender
Mfg. Co. and the Wolverine Bumper
Co. He also was vice president, L.
Perrigo Co., Allegan, Mich.

E. P. Aldredge, 55, assistant gen-
eral superintendent in charge of
Carnegie-Illinois Steel Corp.'s tin
plate works at Farrell, Pa., May 11
in an automobile accident near New
Castle, Pa. He had been associated
with United States Steel Corp. sub-
sidiaries' plants 35 years.

George Carter Miller, 64, presi-
dent, Dodge Mfg. Corp., Mishawaka,
Ind., maker of power transmission
equipment, in that city, May 10.
Prior to becoming president of the
Dodge corporation in 1923 he was
superintendent of Charles Williams
Stores, New York; general manager,
Montgomery, Ward & Co.; general
manager, Beaver Products Co.;
president, Tillotson Mfg. Corp.,
Pittsfield, Mass., and vice president,
George W. Goethals Co., New York.

Windows of



WASHINGTON

By L. M. LAMM
Washington Editor, STEEL

WASHINGTON
■ TEMPORARY national economic committee last week started a new series of hearings on savings and investment.

Edward R. Stettinius Jr., chairman, United States Steel Corp., and Owen D. Young, chairman, General Electric Co., were witnesses at the sessions, which were conducted by the securities and exchange commission.

Mr. Stettinius said the Steel corporation has spent a half billion dollars in replacements and plant facilities in the past ten years. During the 17-year period from 1921-1938, the corporation made gross expenditures for plant and equipment amounting to \$1,222,256,649 and acquired property for common stock valued at \$50,519,537 while \$333,252,435 was retired as funded debt.

During the 17-year period, he said, the corporation had retained profits amounting to \$191,890,003, net tax refunds amounted to \$50,093,864, depreciation allowance was \$937,792,891 and the net reduction of working capital was \$186,300,142. During same period common stock issued amounted to \$239,951,721.

Mr. Stettinius in a preliminary statement told the committee the art of steelmaking has been revolutionized since 1920, spoke of new products and new applications developed.

Particularly he noted the development of stainless.

May Increase Planes' Speed

The Steel corporation, he said, "is experimenting with a mill designed to produce an extremely thin stainless steel strip for the wing and fuselage covering of planes. Such use of welded stainless steel is expected to bring about a marked increase in the speed of both commercial and combat aircraft by reducing wind resistance."

Mr. Young told the committee the

capital gains tax should be repealed to stimulate the flow into productive enterprise of money willing to take risks.

He recommended other changes, including: Modification of the undistributed profits tax;

Abandonment by the administration of a "threatening" attitude toward business and adoption of a policy of encouragement, thereby giving pump-priming "stimulants" a chance to work;

Enactment of broad changes in the bankruptcy laws to speed the process of putting "through the wringer" and rebuilding with private capital unwieldy capital structures "wherever they exist in business";

Suspension of all governmental restraints which are retarding the effectiveness of the spending policy, which should be steadfastly regarded merely as an emergency program;

Exercise of business regulatory powers in a "discriminating" way, always with a view to conserving to the utmost "the advantages of free and competent leadership."

Expansion Is Problem

Analysis of economic trends in our rapidly changing world is fraught with danger and difficulty, testified Dr. Alvin H. Hansen, professor of political economy, Harvard university.

The automobile industry, he said, reached maturity in the 20s and "has ceased to grow, as did the railroads in the 90s. It is the cessation of growth which is disastrous. For when industries have ceased to grow, there is no further need for plant expansion.

"When giant industries have spent their force and ceased to grow, new industries of equal magnitude are necessary. And it may take a long time before these develop. No one can say at this moment what great new developments the future may have in store, but the history of

the last 200 years affords ample evidence for the assumption that new industries proceed at a slow pace."

Dr. Hansen said our country has to get an adequate volume of savings. The stream of savings flowing into life insurance companies, savings banks, mortgage and capital markets (if we are to avoid unemployment), an outlet for new construction.

Replacements Won't

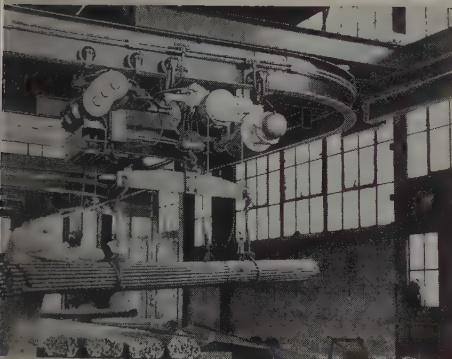
"Replacements and renewals of plant and equipment, no matter how large a scale, will not be financed from depreciation allowances. Renewals and replacements cannot absorb the stream of new savings if the flow of savings is not in expansion, we get unemployment.

"It is just here that we are up against one of our fundamental problems. Depreciation allowances for renewals and replacements in a highly developed industry that it is perfectly possible to make, prodigious progress in the introduction of new products without the use of any new plant for expansion of plant."

Alfred P. Sloan Jr., General Motors Corp., testified that he expects the automobile industry to continue to expand and not believe it has reached stabilization.

"There are more cars than ever before and, in the past history, I think we will see further expansion as the income increases."

Mr. Sloan said there is a close relationship between income and automobile sales.



Tractor and Hoist on 3-ton RailMaster System.

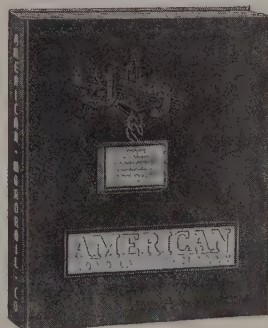


ovement of 3-ton load controlled by push-buttons.

Handling adds no value to a product unless it is co-ordinated with production as part of a process or by tying operations closely together.

A system, so designed, eliminates waste, speeds up the pace of production and invariably establishes lower cost records.

American Mono-Rail engineers apply these principles wherever possible. Extreme flexibility of standard equipment enables them to meet special requirements without extra cost. Engineering service is available at no obligation.



A 254 page book used as a technical reference for all data covering MonoRail Equipment will be sent on letterhead request.

The American MonoRail Co

13102 Athens Ave., Cleveland, Ohio

as income goes up, car sales increase accordingly.

Dr. Lauchlin Currie, assistant director, division of research and statistics, federal reserve board, told the committee expenditures for manufacturing plants and equipment showed a remarkably close relationship to the volume of industrial production throughout the entire period under discussion. He stated that they offset 15 per cent of our savings in 1925, 20 per cent in 1929, and 20 per cent in 1937.

"Expenditures for the plant and equipment of electric utilities appear to be influenced by the relation of kilowatts produced to generating capacity. The 1928 relationship was not regained until 1936," said Dr. Currie.

"Railroad equipment expenditures in 1937 approximated the 1929 level but fell considerably short of the level of the early 20s. Such expenditures appear to be predominantly affected by the supply of rolling stock in relation to peak car loadings.

"Expenditures for agricultural plant and equipment in 1937 were up to the level of the late 20s. Outlets for savings through consumer credit (instalment buying, and so forth) increased rapidly in the 20s and again from 1933-1937. In the latter year the volume of consumer credit outstanding exceeded the 1929 level."

PATTERSON RESIGNS POST IN COMMERCE DEPARTMENT

Richard C. Patterson Jr., assistant secretary of commerce, as expected last week tendered his resignation to the President, effective July 15.

Mr. Patterson was a hold-over from the Roper regime.

A bill to create an undersecretaryship in the department of commerce is pending in the house. It passed the senate without discussion, but seems to be stymied in the house. When Patterson retires Edward J. Noble, who recently resigned as chairman of the civil aeronautics authority, will take over his work.

SENATE COMMITTEE APPROVES WAGNER HOUSING BILL

Wagner bill providing for expansion of the United States housing authority's program by authorizing an additional \$845,000,000 in loans and contributions toward low-cost housing and slum-clearance has been approved by the senate committee on education and labor.

The measure would allow the housing authority to enter into additional contracts for annual contributions of \$45,000,000 and would boost by \$800,000,000 its ability to raise funds for loans.

Chairman Ellender, Louisiana, of

the special subcommittee which handled the bill, explained it merely represents permission to borrow the money for loans, which would be repayable to the housing authority, and will not be included in the public debt.

LEISERSON APPROVED BY SENATE LABOR COMMITTEE

Senate labor committee has approved the Presidential appointment of William M. Leiserson as member of the national labor relations board, succeeding Donald W. Smith. Mr. Leiserson has been chairman of the national mediation board. No hearings were held by the senate committee and the appointment was ordered favorably reported without opposition.

NO MONEY FOR RAILROADS FROM STABILIZATION FUND

President Roosevelt at press conference Friday said he is not considering taking money from the stabilization fund to make loans to railroads for equipment purchases. He stated, however, the administration still is considering plans to finance railroad equipment buying.

TAX REVISION UNCERTAIN; MAY DELAY ADJOURNMENT

Tax revision is in a muddled situation due to disagreements, not only among administration leaders but also among congressmen.

There are two opposing schools of thought on tax revision. One includes Senator Harrison, Mississippi, chairman of the powerful senate finance committee, Secretary of Treasury Morgenthau and Undersecretary John W. Hanes, who believe business deterrent taxes should be changed.

On the other hand, President Roosevelt apparently is not much interested in easing business taxes.

Most everyone agrees, however, that the nuisance taxes, most of which expire June 30, must be re-enacted. These have been netting the government about half a billion dollars a year.

Following a White House conference, Senator Harrison told newsmen he is prepared to fight to force the passage of tax legislation to aid business. The corporation taxes, over which there is so much controversy, expire Dec. 31. There is every indication that the keystone of the tax plan is to repeal the existing remnant of the undistributed profits tax and the substitution of a flat percentage tax on corporation net income in excess of \$25,000.

Many members of congress are insistent on revamping the corporation tax, and there is some indication they may take the situa-

tion in their own hands. The President insists a tax bill not to his liking.

Some congressmen believe a revision bill could be passed over a Presidential veto, if the revision is reasonable and provides revenue.

The tax situation has become so involved that congressional action may be delayed.

Representative Douglass, North Carolina, who is chairman of the house ways and means committee, which originates tax legislation, obeys the President's wishes. He is to be unfavorable toward any bill of deterrents. However, Senator Leiserson has stated flatly that a tax bill as it comes from the senate is not according to his wishes. The bill will be rewritten.

HOUSE SENDS STOCK BILL TO CONFERENCE

The house has followed the senate in sending the minerals bill to conference. The house bill authorized a total of \$100,000,000 for stock, while the senate bill only \$40,000,000. The important differences in the bills must be smoothed out in conference. House members include: House of Representatives, May, Kentucky; Thomas, Faddis, Pennsylvania; C. Massachusetts; and Martin,

FORMER NEWSMAN LEISERSON ON THE SENATE

James R. Brackett, former newspaperman, has been named as executive secretary of the temporary national economic committee, replacing Leon Henderson, former member of the securities and commission.

Mr. Brackett's duties will be largely of an administrative nature and for the present Henderson will continue to direct the economic co-ordination committee's studies.

GOVERNMENT IRON AND STEEL PURCHASES TOTAL \$2.5 BILLION

During the week ending June 22, the government purchased 522,555 tons worth of iron and steel products under the Walsh-Healey act, as follows: National Steel Corp., \$11,571,555; Bearings Inc., Philadelphia, \$540; Judson Steel Corp., Calif., \$12,576; Columbia Steel Corp., San Francisco, \$79,900; Kaiser Structural Steel Co., Kansas, \$11,680; Carnegie Steel Corp., Washington (estimated); Lukens Steel Co., Coatesville, Pa., \$18,222 (estimated); Central Iron & Steel Co., Pittsburgh, Pa., \$92,069 (estimated); International Steel Co., Indiana, \$14,964.

ION

USE 42 PER CENT IN AFTER TO NEW PEAK

ATICAL exports con-
broad gains, reaching
During the first quar-
shipments amounted
a 42 per cent increase
1938 for the correspond-
1938.

customers were Great
\$7,000, and France, \$5,-
Military needs predom-
ing to the department
ing planes and their
accessories constituted
of all American war
two countries pur-
the quarter.

istic and foreign pas-
sengers are placing orders
equipment. Trans-Canada
Montreal, last week award-
to Lockheed Aircraft
Burbank, Calif., for six "Su-
transport planes. First
delivered immediately,
in August.

Export Airlines, New
York, a civil aeronautics au-
thority certificate of convenience
to operate twice-a-
week service to Mar-
time approval will contract
for flying boats similar
to the ship it is now
survey flights. Next year
plans to take bids on its
for long-range craft
passengers, mail and ex-

in mail payment being
airlines by CAA stand
equipment buying. Last

week the President requested a
\$713,200 appropriation to supple-
ment budget allowances for air
mail during the next fiscal year.

Navy department has ordered air-
craft accessories from: Aero Spark
Plug Co. Inc., New York, spark
plugs, \$99,983; and Widin Metal
Goods Co., Garwood, N. J., tow tar-
get releases, \$18,832.

Among current factory construc-
tion programs is the proposal of
Cleveland Pneumatic Tool Co.,
Cleveland, to build a branch plant
at Burbank, Calif., for manufactur-
ing landing gear and other airplane
parts, and pneumatic tools. Cost-
ing \$250,000, factory will comprise
three units totaling 20,000 square
feet.

Will Erect Airplane Factory

Northrop Aircraft Inc., newly-
formed in Los Angeles, is issuing
687,185 shares of common stock, the
proceeds allotted as follows: Plant
construction, \$225,000; production
machinery, \$252,000; development
and research, \$350,000; and remain-
der for working capital.

Other new organizations in the
field include California Metal Air-
craft, Burbank, Calif., Paul New-
comer, representative; and Cali-
fornia Fritzen Propeller Co., Ingle-
wood, Calif.

Canadian Associated Aircraft Ltd.,
Montreal, holding large bombing
plane contracts from the British
government, will receive bids next
month for constructing its projected
250 x 400-foot factory.

Aviation papers to be presented at
World Automotive Engineering con-
gress of the Society of Automotive
Engineers, New York, May 26, are:
"Factors Affecting the Cost of Man-
ufacture and Operation of Large
Airplanes," by Arthur E. Raymond,
director of engineering, Douglas
Aircraft; "Testing of Large Air-
craft," by Edmund T. Allen, con-

sulting aeronautical engineer; "Vi-
bration Characteristics of Aircraft
Engine-Propeller Systems," by
Charles M. Kearns, project engi-
neer, Hamilton Standard Propellers
division of United Aircraft; and
"High Output Aircraft Engines," by
E. W. Hives and F. L. Smith, Rolls-
Royce Ltd., Derby, England.

Wright Aeronautical Corp., Pater-
son, N. J., disclosing details of its
new 2000-horsepower engine, devel-
oped in co-operation with the army
air corps, claims it to be the world's
largest and most powerful air-cooled
power plant for aircraft. Known
as the Duplex-Cyclone, it is an 18-
cylinder, double-row radial type.

Addition of four new series of pre-
cision bearings to its line of air-
plane controls has been announced
by Norma-Hoffmann Bearings Corp.,
Stamford, Conn. One series is a
torque tube type, single-row ball
bearing of stainless steel.

Finished Goods Stocks

Up; Raw Materials Low

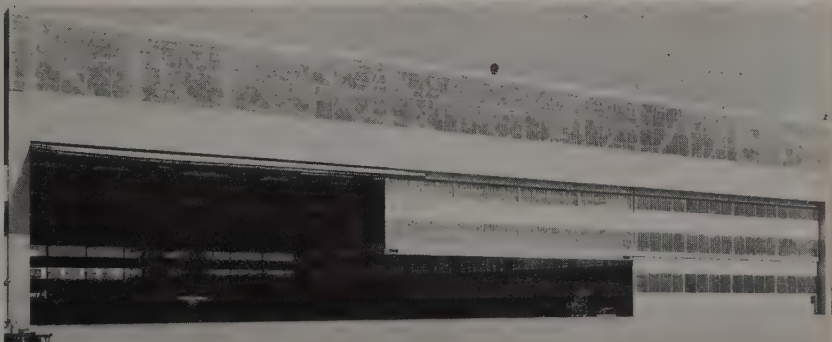
■ Manufacturers' finished goods
inventories advanced in March, fol-
lowing four consecutive monthly de-
clines, the National Industrial Con-
ference board estimates. Increase
brought volume of stocks up to the
level that existed Dec. 31, 1938, but
holdings at the end of March were
higher in relation to production
than they were at the end of last
year because of the sharp decline in
production during the first quarter.

Raw material holdings followed
the downward trend that has been
operating for the past 11 months,
and at the end of March were the
lowest since September, 1936.

The board's indexes (1936=100),
adjusted for seasonal variation:

| | March 1939 | February 1939 | March 1938 |
|-------------------------|---------------|------------------|---------------|
| Raw materials..... | 99.0 | 100.6 | 114.4 |
| Semifinished goods..... | 113.6 | 112.3 | 120.8 |
| Finished goods..... | 110.1 | 109.5 | 116.5 |

■ Forming one end of Glenn L. Martin Co.'s main assembly plant at Middle River, Md., this canopy-type steel and glass door, 300 x 44 feet, is said to be the world's largest electrically-operated door. Weighing 32 tons, it may be raised in 68 seconds. Each of the door's three sections can be lifted individually





WORTHINGTON AIR and GAS COMPRESSORS



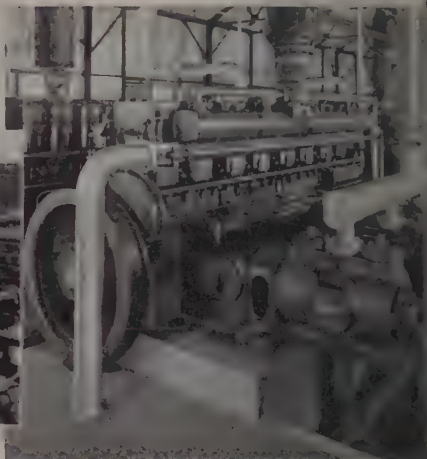
Two-stage air compressor, driven by motor, recently installed in a large factory.



Single-stage air compressor, motor-driven through Worthington Multi-V-Belt drive, supplying air to a pneumatic tube system.



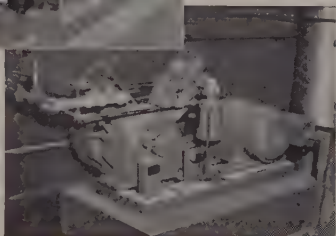
Single-stage steam-driven air compressor . . . in the service of a Western railroad.



One of a battery of ten angle type gas engines . . . in a large natural gasoline plant in California.



Two-stage steam-driven compressor . . . in a prominent Southern oil refinery.



Two-stage angle type air compressor . . . for many medium air supply applications.

*are serving important
in every industry*

FOR any condition . . . from the smallest shop to the largest plant . . . there is a Worthington compressor unit to meet it correctly, without bias or compromise in its service.

**An UNFAILING COMPRESSED AIR SUPPLY
A Prime Requisite for Profitable Operation**

Complete descriptive literature available

Get in touch with the nearest Worthington District Office . . . today

ACG-6

WORTHINGTON PUMP AND MACHINERY CORPORATION

**PRODUCTS OF
WORTHINGTON**

AIR CONDITIONING EQUIPMENT

REFRIGERATION AND ICE PLANT EQUIPMENT

AIR AND GAS COMPRESSORS

STEAM TURBINES

DIESEL ENGINES

CONVERTIBLE GAS-DIESEL ENGINES

CENTRIFUGAL HIGH-PRESSURE BOILER FEED PUMPS

DIRECT-DRIVEN STEAM PUMPS, PISTON AND ROTARY PUMPS

DEEP WELL SUMP AND BEARING PUMPS

STEAM CONDENSERS AND AUXILIARIES

VACUUM PUMPS

STEAM-JET EJECTORS

PORTABLE COMPRESSORS AND AIR TOOLS

For direct, remote, or combined service

V-BELT DRIVES LIQUID METERS

ATLANTA
BOSTON
CHICAGO

CINCINNATI
CLEVELAND
DENVER

DETROIT
EL PASO
KANSAS CITY

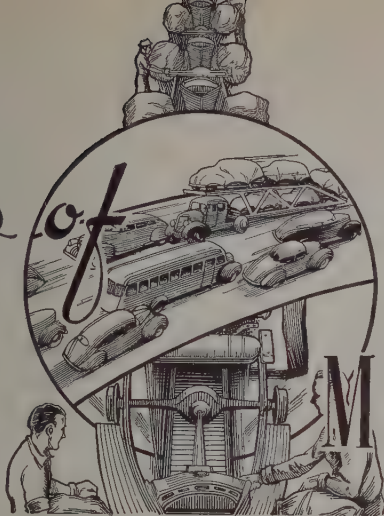
General Offices: HARRISON, NEW JERSEY

Representatives in Principal Cities of Foreign Countries

LOS ANGELES
NEW ORLEANS
PHILADELPHIA

PITTSBURGH
ST. LOUIS
SAN FRANCISCO

Mirrors of



MOTORDOM

A. H. ALLEN

Editor, STEEL

Material appearing in this department is fully protected by copyright, and its use in any form whatsoever without permission is prohibited.

DETROIT

S about steel prices in ere retailing at a dime would still require a f money to buy up the on the other hand, are here is the utmost re- e part of buyers and d commodities to make statements on how was placed during when concessions were have been offered. tance in sheet prices ave originated not in h Chicago, where a com- hall tonnage for Stude- involved. The word py until it encompassed and the fat was in the ge steel buyer here in uying the automotive in- mediate notified all his uers that they should el steel requirements at e prices. In turn, these es called all their steel e termine what could be e very short time steel eces were in an uproar.

Officially Withdrawn

all concessions have awn, and base prices on w by the amount of y differential formerly e latter having been e. The situation is likened ing last fall, when con- re withdrawn after a out a week; later it de- y tonnages were booked companies in the bar- The recent disturbance ave originated with the l companies and gradu- d up. Even now, the tant companies declare onnages have been re- ough they acknowledge me such bookings. ere heard last week that

two automotive accounts had covered for requirements over the balance of the year—50,000 and 200,000 tons respectively—with no sizes or releases specified, and at a price well below that now prevailing. While admitting such deals could be possible, responsible steel company representatives were uniform in expressing disbelief that such transactions had been made.

There are probably only two interests which could use 200,000 tons of sheets over the balance of the year—Fisher Body or Briggs—and it is known that neither of these companies is far enough along on 1940 models to know sizes or schedules. And it is next to impossible to conceive that any steel company would go so far out on a limb as to contract for such a large tonnage, with no indication of when rolling

could be scheduled or what sizes would be involved.

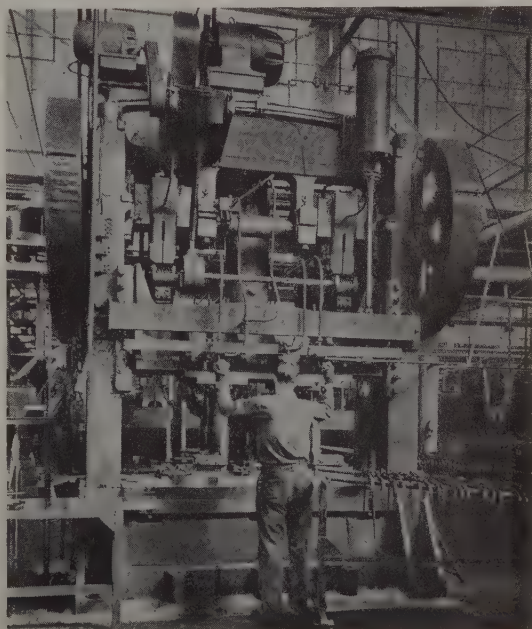
The folly of offering cut-price steel to automobile companies is only too apparent, and even steel company sales officials here denounce the shortsightedness of an industry, which is barely breaking even financially, offering reduced prices to an industry which in the first quarter of this year realized some of the highest profits in a decade or more.

Steel tonnages actually known to have been placed recently do not involve particularly large amounts. Ford, for example, placed 2000 tons a little over a week ago, representing a so-called "fill-in" tonnage and placed "at a price." Packard has ordered about 2000 tons for preliminary 1940 model assemblies. Buick made a buy some weeks ago for 1940 models, but it is not known

Pressing Parts

At Trenton

■ Bending steel gutter strips for body trunks on one of the larger presses at the new Ternstedt-Trenton division of General Motors. Trenton, N. J. Body fittings and hardware for shipment to Fisher Body assembly plants in the East and South now are being fabricated at this plant



whether any concessions applied on this tonnage. For most of the others, it is still too early to have any definite knowledge of 1940 requirements, even for tryouts. Fisher Body, it is reported, is not placing any steel for tryouts, but will use "obsolescence" material instead; that is, steel which was bought for certain 1939 models on which the run has not been up to expectations.

Announced new steel prices are creating some difficult situations. Hot-rolled bars, for example, have been reduced \$2 a ton in base price and the quantity differential of \$3 per ton eliminated; thus the net effect for large buyers is a \$1 per ton increase, which, of course, is not being received any too favorably.

■ FROM the looks of things at this juncture, it appears that World's fair visitors may get a glimpse of new models around the end of July. Another 60 days and the first of the new jobs should put in appearance. In the General Motors lineup, the Buick-Olds-Pontiac group is well along on its program; in fact, some photographs were taken of the new Buick about three weeks ago. This was not a production job, of course, but at least it was far enough along so cameramen could take shots of the exterior.

New Packard lines also should be among the first to break. Changes will be confined mainly to the front end, it is reported, with the most distinguishing feature being narrower radiator shells.

Chrysler program is understood to be just about as far along as it was last year at this time. New model conferences of sales and advertising personnel probably will be scheduled some time in July, most of these people planning to have vacations over by the end of June.

One competent observer has suggested the possibility of these summer models being christened "World's Fair Specials," to be followed six months later by the real 1940 models. It must be conceded that it is stretching a point to call a car introduced in July, 1939, a 1940 model. At the same time, however, it is hardly likely the expense of another new model program in the last half of this year could be justified.

In connection with new models, there is considerable speculation on the Ford program. Last year, it will be recalled, Ford continued the deluxe model practically unchanged and called it this year's standard model, at the same time introducing a new deluxe series. The deluxe models have been far outselling the standard or 60 series this year, suggesting that perhaps the same policy may be followed next year, that is,

to continue this year's deluxe as next year's standard, drop the present 60 model, and introduce a newly styled deluxe. If deluxe models continue to outsell the standard next year, it would appear an appreciable saving on tools and dies could be effected by continuing this year's deluxe model, with perhaps a few minor embellishments.

The Ford tractor program is going ahead quietly. A steel company official here has placed an order for one of the new units, and expects to get delivery in a few weeks.

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

| | 1937 | 1938 | 1939 |
|------------|-----------|-----------|-----------|
| Jan..... | 399,186 | 227,130 | 353,946 |
| Feb..... | 383,900 | 202,589 | 312,141 |
| March.... | 519,022 | 238,598 | 389,489 |
| 3 mos..... | 1,302,108 | 668,346 | 1,055,576 |
| April..... | 553,231 | 238,133 | *352,000 |
| May..... | 540,377 | 210,183 | ..... |
| June..... | 521,153 | 189,399 | ..... |
| July..... | 456,909 | 150,444 | ..... |
| Aug..... | 405,072 | 96,936 | ..... |
| Sept..... | 175,630 | 89,623 | ..... |
| Oct..... | 337,979 | 215,296 | ..... |
| Nov..... | 376,629 | 390,350 | ..... |
| Dec..... | 347,349 | 407,016 | ..... |
| Year..... | 5,016,437 | 2,655,777 | ..... |

*Estimated.

| Estimated by Ward's Reports | | |
|-----------------------------|--------|--------|
| Week ended: | 1939 | 1938† |
| April 22 | 90,280 | 60,563 |
| April 29 | 86,640 | 50,755 |
| May 6 | 71,420 | 53,385 |
| May 13 | 72,375 | 47,415 |
| May 20 | 80,145 | 46,810 |

†Comparable week.

| | Week Ended | |
|----------------------|------------|--------|
| | May 20 | May 13 |
| General Motors | 31,885 | 27,120 |
| Chrysler | 17,900 | 17,690 |
| Ford | 20,630 | 16,900 |
| All others | 9,730 | 10,665 |

Price is understood to be \$400, without implements.

Ford open-hearth operations have held steady for the past three months on the basis of six units melting, although minor shifts are made from time to time in the size of furnaces operated. Billet stocks are reportedly low and steelmaking operations will continue throughout the summer on the present basis. One reason is that, with billet stocks low, some steel can be piled profitably to permit consumption of coke oven gas, since it is not desired to shut down any of the coke oven battery. Further, with industrial gas consumption low at present, it is not possible to feed any excess gas at the Rouge plant into city mains, so it must be used or wasted.

New car sales by Buick dealers in the first ten days of May totaled 5763 units, an increase of 55 per

cent over the same period a year ago, and also ahead of the previous 10-day period. Buicks are holding steady on a weekly basis, averaging 576 cars.

Studebaker reports production of 10,974 cars and trucks and retail deliveries of 3329 in April, 1938. The improvement reflects a setback in output provided by in the low-price Champion plant is working 5½ days a week, turning out about 2600 cars.

Construction of the concrete, brick and steel across East Grand boulevard connecting two main divisions of Packard plant, has materials handling operating plants. Formerly an avenue boulevard crossings required in trucking over a bridge has reduced to 226, and all manufacturing in the mile-long plant, including the forge shop, are now tied together by conveyor lines.

Discusses Future

Future of the automobile was discussed by J. B. Chrysler Corp. engineer in a meeting of the American institute in New Orleans today. Citing a number of factors, he concluded that in current utilization of regular fuel, but that the utilization of octane number fuels is possible. Increase in octane number 20 produced only a 5 per cent increase in output. High compression ratios in engines, advantages in power and reduction in radiator and lowering of exhaust temperatures; but have the age of increased engine requiring more structural

From the date of its introduction in January, 1926, through 1939, Pontiac has built 1,000,000 cars, the first 1,000,000 in nine years and four months, the next 750,000 in only 18 months. Looking back over the record, Klingler, general manager, says, "We may not realize it now but from the viewpoint 1939 will be the 8-year and the 10-year averages. Another sign is that by May 1 we have per cent more 1939 models we built during the model year."

■ Steel office furniture reported to the department of commerce during first quarter totaled 546,010, compared with 546,010 in first quarter, 1933, and 546,010 in corresponding period, 1932.



SALEM
ENGINEERING
COMPANY

Offices in Chicago, Detroit, New York, Pittsburgh, SALEM, OHIO, U. S. A.,
London, Paris, Berlin, Welland, Ontario

SALEM ENGINEERING COMPANY

Contribute to American Iron and Steel Institute's Technical Session

■ JAMES E. LOSE, vice president in charge of operations, Carnegie-Illinois Steel Corp., will speak on "Problems in the Manufacture and Use of Steel in the United States."

Native of Kansas, he moved with his family to the Pittsburgh district where he attended high school and Pittsburgh academy, specialized in mechanical engineering at Carnegie

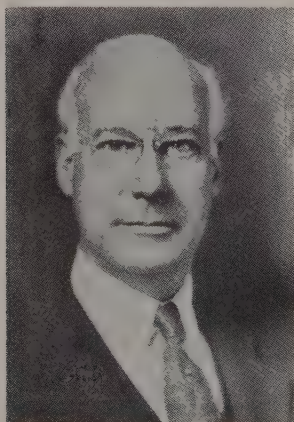


James E. Lose

Institute of Technology.

Mr. Lose began his business career in 1910 with Carnegie Steel Co., and has been associated continuously with that company and its successor, Carnegie-Illinois Steel Corp. He started at Carrie Furnaces, Rankin, Pa., the blast furnace department of Homestead Steel Works as a tracer in the drawing room, and progressed to superintendent of blast furnaces.

In 1928, he became assistant general superintendent of Homestead Works; in 1930, general superintendent; in 1933 vice president in



Bradley Stoughton

(Following its usual custom, STEEL herewith presents brief biographical sketches of those who will present papers at the technical session, forty-eighth general meeting of the American Iron and Steel Institute, New York, May 25. Charles M. White, vice president, Republic Steel Corp., Cleveland, will preside at the technical session.

charge of operations, Carnegie Steel Co., a title he retained in Carnegie-Illinois when the corporation was formed in 1935. He is a member, American Iron and Steel institute, Eastern States Blast Furnace and Coke Oven association and army ordnance association.

■ ISAAC HARTER, who will present a paper on "The Metallurgy and Technique of Welding," is vice president in charge of manufacturing, Babcock & Wilcox Co., New York, and also vice president, Babcock & Wilcox Tube Co., Beaver Falls, Pa.

Born in Mansfield, O., he attended St. Paul's school, Concord, N. H., and the University of Pennsylvania, Philadelphia, graduating in 1901 with a bachelor of science degree.

He joined Aultman & Taylor Machinery Co., Mansfield, and later the Stirling Consolidated Boiler Co., Barberton, O. Following purchase of this company by Babcock & Wilcox Co., he was made superintendent of the Barberton works.

In 1910 he was appointed superintendent of the company's plant at Bayonne, N. J., and ten years later, assistant to the president, with headquarters in New York. In 1924 he assumed his present duties.

Mr. Harter also is president and a director, Diescher Tube Mills Inc., Pittsburgh; director, Bailey Meter Co., Cleveland; and director, Babcock & Wilcox Goldie-McCulloch Co., Galt, Ont.

He is a member of the American Iron and Steel institute, American Society of Mechanical Engineers, Franklin institute, Philadelphia; Institute of Metals, London; and Sigma Xi, an honorary fraternity.

■ BRADLEY STOUGHTON, who will speak on "The Training of a Metallurgist," is dean of the College of Engineering, Lehigh university, Bethlehem, Pa. He received a bachelor of philosophy degree from Yale in 1893, and bachelor of science degree from Massachusetts Institute of Technology in 1896.

He became a metallurgist for Il-

linois Steel Co., South in 1898; chief of Cor division, American S Co., Cleveland, in 19 bessemer steel departa jamin Atha & Co., N in 1901; consulting engi joined the Lehigh facu

Dr. Stoughton is the American Society for an honorary member. Engineering association member and has been Iron and Steel institu the American Iron and tute, American Foundr

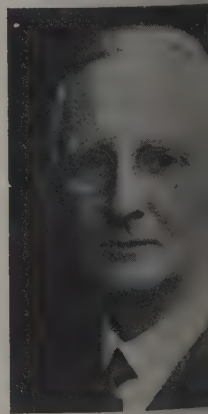


Isaac Harter

ciation, many other to cieties.

He invented a conver steel castings and proc melting in cupolas, is "Metallurgy of Iron and co-author of "Engineer lurgy."

■ JAMES HENDERSON chairman, Appieby Steel Co. Ltd., London will discuss "Problem Manufacture and Use Great Britain." Mr. Hen



James Henderson

with the technical
of Appleby-Froding-
ers and has held vari-
from chief metallur-
gical director.

was announced he
and the Bessemer gold
by the council of
Steel institute (Brit-
ish) was founded by
Bessemer for distin-
guishing in promot-
ing the tech-
nological develop-

ment of the iron and steel indus-
try.

Mr. Henderson is a director,
United Steel Companies Ltd.; past
president, British Iron and Steel
Federation and the Lincolnshire Iron
and Steel institute; former chair-
man, Lincolnshire Ironmasters' as-
sociation and Iron and Steel Indus-
trial Research council; and a mem-
ber of council and honorary treas-
urer of the Iron and Steel institute
(British).

Tru-Lay and Cable Company's Exhibit

How Industry Serves Mankind

NEW YORK
and metalworking
World's fair visitors
the story of their prod-
ucts and how they
are made in dozens
of exhibits in the
grounds.

ACCO industries today
show mankind's activities in
the "World of To-
day" theme of American
Chain Co.'s exhibit in the
building, just across from
the pylon and perisphere.
The exhibit is expressed by three
murals, typifying in-
dustry, culture and transpor-
tation. They are spread across the
front of the exhibit, flanked
by the company's divisions.
Upon approaching is a
display of its trademark—
the pylon of the ACCO indus-
try, in relief, with special
effects. Slowly revolving

behind the trademark figure, a
large gear—symbolizing industry—
carries the trademark of each di-
vision. Projected in succession on
a screen within the triangle of the
trademark are pictures of com-
pany's manufacturing plants in the
United States, Canada and England.

In the foreground, a massive rep-
lica of wire rope slowly turns, flood-
ed with light from above. As this
revolves, it appears to move con-
tinuously from the upper structure
into a revolving base, on which are
depicted the various steps in the
manufacture of wire rope, from iron
ore to finished product.

On the background and on pylons
is a graphic portrayal of the prin-
cipal products of American Chain's
several divisions.

Tru-Lay and Lay-Set preformed
wire rope are shown in a series of
eight panels, each bringing out an
advantage of the preformed con-

struction in wire rope. Colored
translites of photographs depict
each advantage.

Tru-Lay brake controls are shown
in a phantom view of a modern car
with a cut-away section of a con-
trol. A motivated demonstration of
Tru-Stop brakes shows how the ven-
tilated disk dispels heat generated
by the braking operation, making
for greater safety.

Campbell abrasive cutting ma-
chines and nibbling machines, and
their operation, are shown by a
series of shop photographs auto-
matically projected on a screen on
the side of the first pylon.

Mounted on the front of this py-
lon is a Wright improved high-speed
hoist with a transparent case
through which the gears can be
seen. When a button is pressed, the
hoist operates, goes through the
cycle of lifting and lowering a
weight.

Reading-Pratt & Cady valves are
shown on the next background. In
the center is a massive electrically-
operated cast steel globe valve for
high-pressure, high-temperature
service, which can be set in motion
for demonstration.

An electrically-operated cast steel
gate valve is set on the front of a
nearby pylon. Shown on one side
of this pylon are Reading electric
steel castings, ACCO malleable iron
castings, and Highland iron and
steel products.

Automotive Equipment Featured

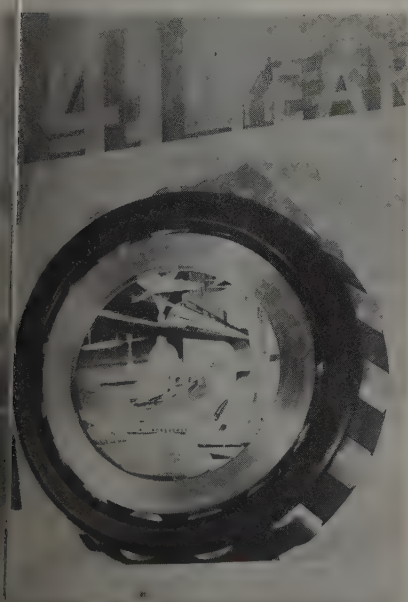
Manley automotive equipment is
presented in a miniature service sta-
tion. In position are scale models
of Manley jacks, lifts, air compres-
sors, presses, and wrecking cranes.
Beneath, leaves of a large book turn
automatically, each spread showing
photographs of Manley items.

The succeeding background fea-
tures Weed chains. In the center is
a miniature snow storm within a
tire equipped with a Weed Ameri-
can bar-reinforced tire chain for pas-
senger cars. Below this is an ani-
mated display on which two mini-
ature cars appear alternately, one
without chains skidding as it trav-
els, the other with chains and hold-
ing true to its course.

Page products occupy another py-
lon. Welding wire is shown in a
niche on one side, with a diorama
depicting a man welding the steel
framework of a building. Page
Fence is exhibited on a circular re-
volving unit on the pylon's front.

Welded and weldless chain is
shown in the next background. Be-
low a pictorial representation of the
many fields in which they are used,
the types of ACCO chain are mount-
ed on a series of 18 panels.

Owen Spring products are dis-
played in a double case containing
sectional models of spring centers.



Marks Travel Progress

■ This model roller
bearing, a feature of
the Timken exhibit in
the Metals building,
New York World's fair,
is 9 feet 9 inches in di-
ameter. It rolls back
and forth at the top of
the exhibit, showing
how bearing parts re-
volve in use. Exhibit
marks the forty-first an-
niversary of roller bear-
ings and reviews the
greatest generation of
travel progress in his-
tory

Steel "Deficiency" 250,000,000 Tons, Estimated for Warehouse Group

■ UNCERTAINTY is the greatest enemy of all business, declared R. E. Desvernine, president, Crucible Steel Co. of America, Pittsburgh, before the thirtieth annual convention of the American Steel Warehouse association in Chicago May 16-17.

Business, he said, can adjust its practices to almost any reasonable system or to almost any rules, but it cannot operate under any system or set of rules which are subject to change without notice. He maintained business is terrorized and rendered impotent by uncertainties just as man is incapacitated by fear.

"Promises of temporary 'appeasement,' even if fulfilled, are incapable of producing permanent recovery. We do not need a 'breathing spell' to revivify us to fight another round. We must have a permanent cessation of hostilities and a reorientation back to sound and proven economic policies.

"Today economic totalitarianism and industrial democracy are having their tussle and permanent industrial revival cannot be expected until we have a justified confidence that industrial democracy is going to win.

Totalitarianism Not Solution

"Economic totalitarianism in the form of either communism, fascism, or state capitalism, is essentially paternalistic and under them we must look to the state for our economic keep.

"Under industrial democracy, the free enterprise system, we must look within ourselves for our economic well-being. Under one, the pattern of our economic life is designed for us and we must stereotype our life accordingly. Under the other, we must design our own pattern and fashion our own destinies as free men. These two systems are absolutely irreconcilable. They will not mix. Our trouble has been that we have been ensnared by totalitarian panaceas as a way out of depression and too many of us have been imitating the chameleon on scotch plaid with the same consequences.

"This is the predicament in which business finds itself and it is my answer to the question, 'What's the Matter With Business?'"

More than 300 were registered for the business sessions and it was estimated more than 400 attended the annual banquet Wednesday night at which Charles R. Hook, president, American Rolling Mill Co., Middletown, O., was the fea-

tured speaker. His topic was "Private Enterprise and Our Standard of Living."

At the opening business session Tuesday, A. Oram Fulton, president of the association, spoke on "Association Responsibilities and Obligations." He said despite depressions, unbalanced budgets, increasing taxes, weird doctrines of the New Deal, and the rumbling of war abroad, he would not sell the United States and its industries short. He declared American industries ultimately will go on to greater achievements.

Next on the program was Walter S. Doxsey, executive secretary, who spoke on "Ups and Downs of Distribution." He pointed out that steel production in the last nine years was only 27½ per cent larger than it was during the nine years beginning with 1907 and ending with 1915, although the gain in population was 41 per cent. He declared steel consumption has failed to keep pace with increasing population during the past nine years, and in the meantime scores of new uses and markets have been developed.

"Not only have distributors' problems been aggravated by continued lethargy in demand," he said, "but all the while competition has become keener. Information from all available sources clearly shows an expansion in the number of warehouse outlets in the last few years entirely out of proportion to market requirements. Furthermore, in years such as we have had since 1930 mill competition for warehouse size orders has been more intensive and has added substantially to the woes of the distributor."

Broader Service Possible

Mr. Doxsey said the deficiency in the nine years starting with 1930, from what in 1929 was considered a normal trend, is equivalent to 250,000,000 gross tons, or about four times the production in 1929.

In his opinion, the facilities of the steel warehouse can be utilized more effectively, distributors can perform broader service and can contribute economies in the merchandising of steel. However, progress cannot come from haphazard tinkering, sporadic experiments, or wishful thinking. The obligation to strive for greater efficiency in distribution cannot be borne alone by the warehouse operator; the producer must bear his share. These improvements can be achieved only

through a long-range, thoroughly developed, back termination of all.

Speaking on "Problemandising Hot-Rolled Steel," Frederick Rogers, chairman of the Warehousing and Distribution committee, American Steel Warehouse association, for some years the association directed its efforts toward one objective—obtaining item extras on structural shapes and plates. Because of the depression, he said, it has accelerated "to arrange" during the past 12 months to present problems of embracing nearly all products of the hot-rolled steel industry.

"While I do not wish to emphasize our need for item extras on structural shapes and steel plates," he said, "I wish to emphasize the other factors that are influencing the steel wariness."

He pointed to the inactivity of fabricating shops in obtaining prime material from the warehouse markets and that certain fabricators are not functional allowances in their pricing, which he described as favoritism, and which he intended to distribute.

Dumping Causes Problems

Too often, he said, distributors cannot resist the temptation to dump up stocks far beyond normal requirements and too often the stocks of plain material are dumped onto the market when orders are scarce and warehouse sales are likewise.

"If steel in all its forms is made available to construction where, if the steel mill is relieved from handling small orders, the general house with representative each territory is essential."

The treasurer's report and the secretary were read at the business meeting Wednesday night, followed by an address on "Fundamentals of Cutting Steel," by C. M. Inman, Pratt & Whitney, which was a study of warehouse problems.

"Steeling Steel Market," the subject of an address by Benjamin F. Bills & Associates, Mr. Bills sought to show the difference between order salesmanship, urging a more approach to the sales problem.

At the closing business session of the convention Wednesday afternoon, Norman L. Deubert, Steel Corp., Massillon, O., discussed the various problems of the warehouse personnel and steel mill metallurgist.

Charles Dickerson, Middletown Steel Co., Dayton, O., was the

Your Blessings or Count

the industry needs," he
encourage to say 'no'. To
look at an order floating
price tag on it and
floating by."

banquet Wednesday
Fulton, retiring presi-
ment with a clock by
the association in appre-
services for the past
look, in his address,
the danger in public in-
ward economic and so-
he urged business men
their power to promote
of such problems by
the street."

directors elected Charles
Steel Products Co.,
ident. Howard M. Tay-
Spotswood Co., San
and Richmond Lewis,
Lewis Co., Springfield,
elected vice presidents.
Burke Steel Co. Inc.,
Y., was elected treas-
Walter S. Doxsey, was re-
ective secretary.

ing were re-elected di-
ge for a three-year
Ducommun, Ducommun
Supply Co., Los Angeles;
Graff, Joseph T. Ryerson
Chicago; and E. L.
T. Ward's Sons Co.,

to the president, vice
nd treasurer, the follow-
ected to the executive
A. C. Castle, A. M.

Castle & Co., Chicago; A. Oram Ful-
ton, Wheelock, Lovejoy & Co. Inc.,
Cambridge, Mass.; Lester Brion,
Peter A. Frasse & Co., Inc., New
York; E. D. Graff, Joseph T. Ryerson
& Son Inc., Chicago; E. L.
Parker, Edgar T. Ward's Sons Co.,
Pittsburgh; A. W. Herron Jr., Jones
& Laughlin Steel Corp., Pittsburgh;
and J. Frederick Rogers, Beals,
McCarthy & Rogers Inc., Buffalo.

On Thursday members inspected
plants of A. M. Castle & Co., General
Steel Warehouse Co. Inc., W. J.
Holliday & Co., Hammond, Ind.,
Jones & Laughlin Steel Corp., Joseph
T. Ryerson & Son Inc., Scully Steel
Products Co., Bliss & Laughlin Inc.,
Carnegie-Illinois Steel Corp., Inland
Steel Co., and Wyckoff Drawn Steel
Co.

Warehouse Chapters Elect Officers

■ Eight additional chapters of the
American Steel Warehouse associa-
tion have elected officers for the
coming year, as follows:

Central States: President, Bud Lowen-
stine, Central Steel & Wire Co., Chicago;
vice presidents, W. J. Holliday, W. J.
Holliday & Co., Hammond, Ind., and
E. G. Fisher, National Steel Co., Chicago;
secretary, C. G. Bothwell, Edgar T. Ward's
Sons Co., Chicago; treasurer, M. A.
Blessing, Jones & Laughlin Steel Corp.,
Chicago. Mr. Lowenstine will also serve
as national director.

Cincinnati: President, J. W. Herr, Cin-
cinnati Steel Products Co.; first vice
president, Chas. W. Brown, Brown Steel
Co., Columbus; second vice president,
J. C. Wagner, Todd-Donigan Iron Co.,

Louisville, Ky.; secretary, G. E. Mayer,
Jones & Laughlin Steel Corp.; treasurer,
J. C. Betz, S. A. E. Steels; national direc-
tor, J. A. Thiele, Miami-Dickerson Steel
Co., Dayton, O.

Detroit: President, A. N. Koch, Steel
Plate & Shape Corp.; secretary-treasurer,
George L. Morin, Central Steel & Wire
Co. Mr. Morin will also serve as national
director.

Missouri Valley: President, E. F. Mayer,
Kansas City Structural Steel Co., Kan-
sas City, Kans.; vice presidents, G. E.
Heimovics, Milcor Steel Co., Kansas City,
and Ivan H. Clough, Gate City Iron
Works, Omaha, Nebr.; secretary-treas-
urer, R. W. Wilkinson, Paxton & Vierling
Iron Works, Omaha. Mr. Mayer will also
serve as national director.

Northern Ohio: President, E. J. Heff-
ner, Scully Steel Products Co.; vice presi-
dent, F. W. Krebs, Super Steels, Inc.;
secretary-treasurer, George Parker, Edgar
T. Ward's Sons Co.; national director,
F. A. Michell, S. A. E. Steels; all of
Cleveland.

Pittsburgh: President, J. M. Hilbish,
Jones & Laughlin Steel Corp.; vice presi-
dents, J. H. Fogwell, Scully Steel Pro-
ducts Co., and F. B. Lorenz, Edgar T.
Ward's Sons Co.; secretary, D. Davia,
Bethlehem Steel Co., Carnegie, Pa.;
treasurer, William L. Abbott, McKee-
Oliver, Inc. Mr. Fogwell will also serve
as national director.

Southern California: President, E.
Jungquist, Percival Steel & Supply Co.;
vice presidents, John Robertson, A. M.
Castle Co., and Donald Priest, Los An-
geles Heavy Hardware Co.; secretary-
treasurer, Lyle B. Yeaton; all of Los An-
geles. Mr. Robertson will also serve as
national director.

Wisconsin: President, George Gibbs,
Gibbs Steel Co.; vice president, L. R.
Moise, Moise Steel Co.; secretary-treas-
urer, George W. Smith, Joseph T. Ryerson
& Son, Inc.; all of Milwaukee. Mr.
Moise will also serve as national director.

For earlier chapter elections see
STEEL, April 24, p. 27.

Machine Tool Benefits Outlined in Booklet

■ Machine tool industry's impor-
tance in the national defense pro-
gram is out of all proportion to the
dollar volume of business received
from this source, according to a
booklet, "Machine Tools and You,"
just issued by the National Machine
Tool Builders' association, Cleveland.
In peace times national defense re-
quirements represent only a small
fraction of the industry's total
business, contrary to general be-
lief.

"The industry," the booklet states,
"is dedicated to the arts of peace.
It is the foundation on which rest
the giant industries of America,
which have made possible the high-
est standard of living which the
world has ever known.

"The machine tool is the mother
of mass production. Without it our
standard of living would approxi-
mate 1840.

Without modern machine tools, it
is stated, an automobile, inferior
to those now available at \$600,
would cost \$3500. Typewriters sell-
ing for around \$100 would cost
\$1000. An ordinary dollar alarm
clock would cost \$25 or more.

Encourages Shop Employees To Read



Employees of Monarch Machine Tool Co., Sidney, O., are given every
to keep up with latest developments in their own and related manu-
fields. Leading industrial and business publications have been made
on magazine racks in the shops, and a large chart showing the national
plans for machine tools is displayed at each of these conveniently located
reading rooms

Fireproof Construction Makes Progress

■ HUMAN progress moves with astonishing rapidity in some directions, with amazing slowness in others. The latter seems to be the case in overcoming fire hazard on ships at sea. Although the principles of fireproof construction were understood many years, and despite the long record of marine disasters by fire, it was not until the burning of the MORRO CASTLE off Asbury Park, N. J., Sept. 8, 1934, with a loss of 134 lives, that a real approach to the problem began to be made.

Out of that holocaust developed the new safety specifications of the bureau of marine inspection and navigation, and, on Sept. 24, 1938, the launching of the first passenger ship constructed under the new specifications. This ship, PANAMA, is one of three 10,000-gross-ton vessels for the Panama Railway Steamship Co.'s service between New York and the Canal Zone. It was designed (STEEL of May 1, page 33) by George G. Sharp, naval architect, New York, with Raymond Loewy, industrial engineer, New York, collaborating in decorations and finishings, and was built by the Shipbuilding division, Bethlehem Steel Co. at its Fore River yards, Quincy, Mass., where two sister ships, ANCON and CHRISTOBAL, are nearing completion.

No Compromise With Safety; Beauty Achieved Without Loss of Utility

Practically the only way to burn PANAMA or any part of it would be to cut it up with oxyacetylene torches and put it in an open-hearth furnace. For there are no compromises here with inflammable or semi-inflammable materials. All partitions are asbestos-core steel panels. Furniture is steel, aluminum alloys and other

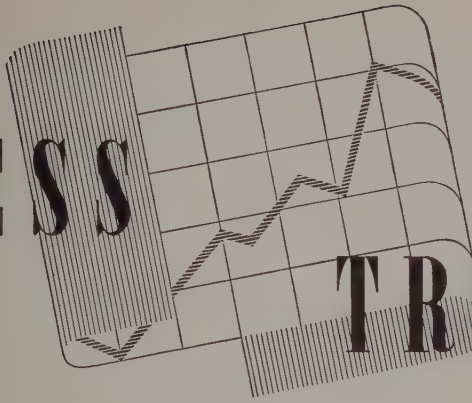
non-inflammable materials, with fireproofed fabrics in upholstery. Venetian blinds in cabins are steel.

And fireproof construction was achieved without sacrifice in the decorative treatment. Simple, unified and modern effects were obtained. Windows are grouped into panels. Steel structural beams were accented or subdued, according to the effect desired. The ship is decorated throughout in pastel shades, with stainless steel, aluminum alloys and plastics effectively used.

Research on Fireproof Ships Suggests Greater Use of Steel in Buildings

Perhaps the most interesting feature of this first fireproof passenger liner is that it is a product of research. While it was known that fireproof construction could be attained through the use of metals and other non-inflammable materials throughout, much study was required to adapt these materials to designs acceptable to ship owners and to the bureau of marine inspection and navigation. For this work the Bethlehem Shipbuilding yards organized a special staff which, by cut-and-try methods, carried the matter to a successful conclusion.

In the meantime, fire continues the cause of much financial loss and suffering. This is especially true as regards to residences in cities and towns and farm buildings. Notable progress has been made in the adaptation of fireproof materials to building construction. But a great deal remains to be made. Here is an opportunity for further expansion in the use of steel and other non-inflammable materials. Research work in this field profitably may be intensified.



BUSINESS TREND

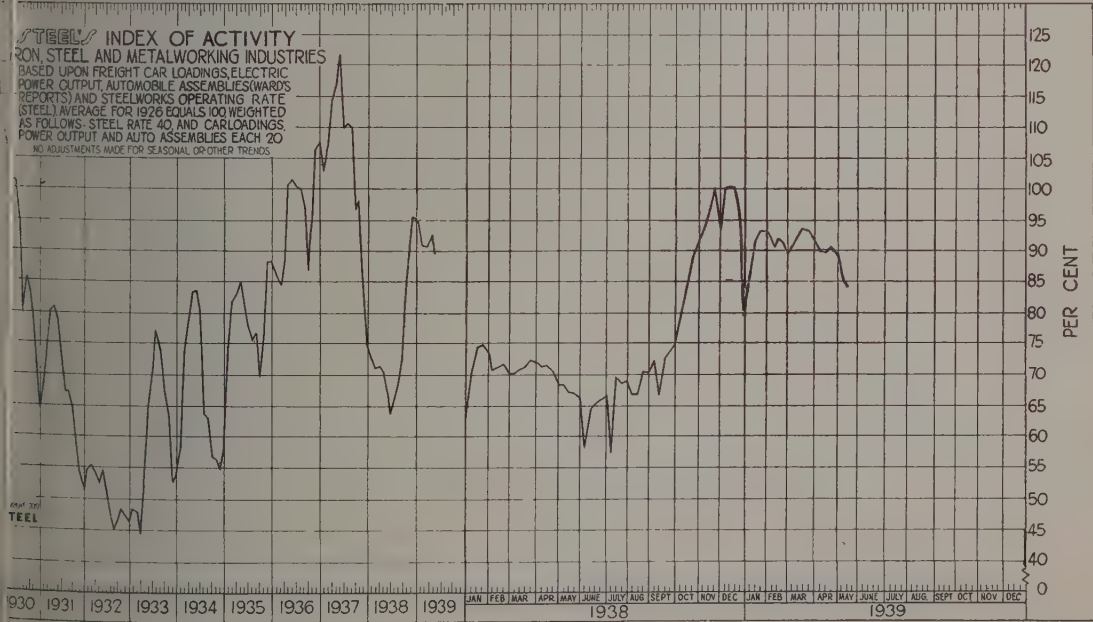
Drifts to Lower Sentiment Improved

Lessening of tension in the European situation, the coal strike, the outlook appears brighter. Another encouraging factor is the replenishing inventories which have been in progress for several months. Automobile production and electric power during the week ended May 13 were not offset the declines in revenue freight car-

loadings and steelmaking operations. Reflecting this situation STEEL's index of activity eased 0.9 point to 84.2. This is the third consecutive weekly decline in the index. However, the current level of activity remains well above the 67.2 recorded by the index in the comparable week last year.

Reflecting the shutdown of practically all bituminous coal mines in the United States during the week ended May 13, revenue freight carloadings declined seasonally to 555,396 cars, as compared with 572,875 in the preceding week, and 541,813 in the like week of 1938. Resumption of mining operations in several districts last week will be reflected shortly in increased carloadings.

The downward drift in automobile production was at least temporarily arrested when assemblies rose to



STEEL'S index of activity declined 0.9-point to 84.2 per cent in the week ended May 13:

| 1939 | 1938 | Mo. Data | 1939 | 1938 | 1937 | 1936 | 1935 | 1934 | 1933 | 1932 | 1931 | 1930 | 1929 |
|------|------|------------|-------|------|-------|-------|------|------|------|------|------|-------|-------|
| 89.3 | 70.3 | Jan..... | 91.1 | 73.3 | 102.9 | 85.9 | 74.2 | 58.8 | 48.6 | 54.6 | 69.1 | 87.6 | 104.1 |
| 91.5 | 70.1 | Feb..... | 90.8 | 71.1 | 106.8 | 84.3 | 82.0 | 73.9 | 48.2 | 55.3 | 75.5 | 99.2 | 111.2 |
| 92.7 | 70.8 | March..... | 92.6 | 71.2 | 114.4 | 88.7 | 83.1 | 78.9 | 44.5 | 54.2 | 80.4 | 98.6 | 114.0 |
| 93.3 | 71.3 | April..... | 89.8 | 70.8 | 116.6 | 100.8 | 85.0 | 83.6 | 52.4 | 52.8 | 81.0 | 101.7 | 122.5 |
| 93.2 | 72.4 | May..... | ..... | 67.4 | 121.7 | 101.8 | 81.8 | 83.7 | 63.5 | 54.8 | 78.6 | 101.2 | 122.9 |
| 92.2 | 72.0 | June..... | ..... | 63.4 | 109.9 | 100.3 | 77.4 | 80.6 | 70.3 | 51.4 | 72.1 | 95.8 | 120.3 |
| 90.0 | 71.3 | July..... | ..... | 66.2 | 110.4 | 100.1 | 75.3 | 63.7 | 77.1 | 47.1 | 67.3 | 79.9 | 115.2 |
| 89.7 | 71.4 | Aug..... | ..... | 68.7 | 110.0 | 97.1 | 76.7 | 63.0 | 74.1 | 45.0 | 67.4 | 85.4 | 116.9 |
| 90.4 | 70.8 | Sept..... | ..... | 72.5 | 96.8 | 86.7 | 69.7 | 56.9 | 68.0 | 46.5 | 64.3 | 83.7 | 110.8 |
| 89.2 | 68.4 | Oct..... | ..... | 83.6 | 98.1 | 94.8 | 77.0 | 56.4 | 63.1 | 48.4 | 59.2 | 78.8 | 107.1 |
| 85.1 | 68.5 | Nov..... | ..... | 95.9 | 84.1 | 106.4 | 88.1 | 54.9 | 52.8 | 47.5 | 54.4 | 71.0 | 92.2 |
| 84.2 | 67.2 | Dec..... | ..... | 95.1 | 74.7 | 107.6 | 88.2 | 58.9 | 54.0 | 46.2 | 51.3 | 64.3 | 78.3 |

THE BUSINESS TREND—Continued

72,375 from 71,420 in the preceding week. Automobile sales in the first ten days this month were approximately 6 per cent larger than in the comparable period in April, and 45 per cent better than a year ago. With favorable weather, there appears to be reasonable grounds for expecting sales to continue to improve through the remainder of this month.

APRIL IRON OUTPUT OFF 10.9 PER CENT

Average daily coke pig iron production in the United States in April declined 10.9 per cent to 68,793 gross tons, compared with 77,201 tons in March. The April average production was the lowest since October, 1938, but remained substantially above the average in the comparable month last year of 46,267 tons. Active stacks on April 30 numbered 102, or 21 less than at the close of March. Relating production to capacity operations in April averaged 50 per cent, against 56.1 in March and 33.4 in April, 1938.

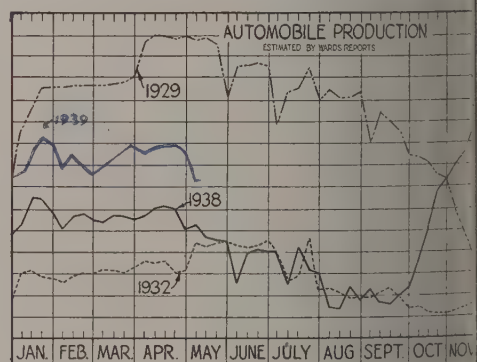
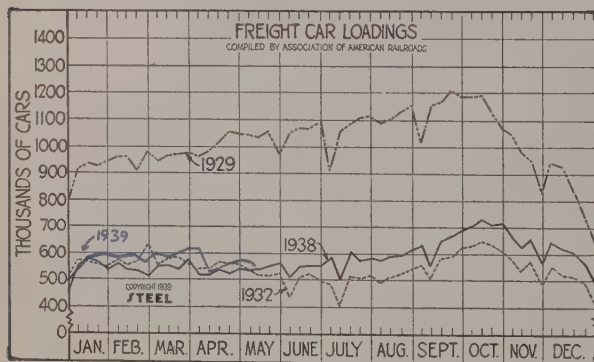
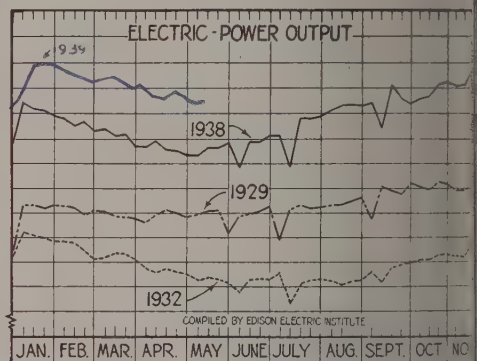
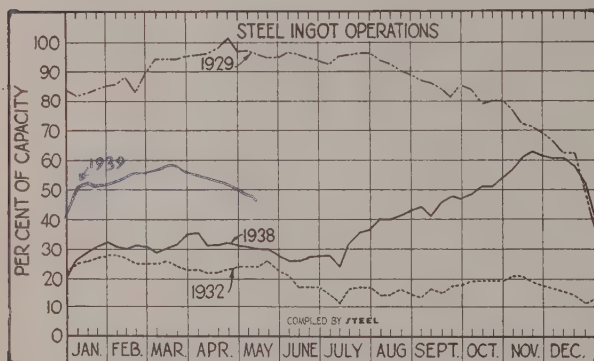
FAILURES INCREASE CONTRA-SEASONALLY

The number of commercial failures increased slightly in April, whereas the seasonal expectation is for a re-

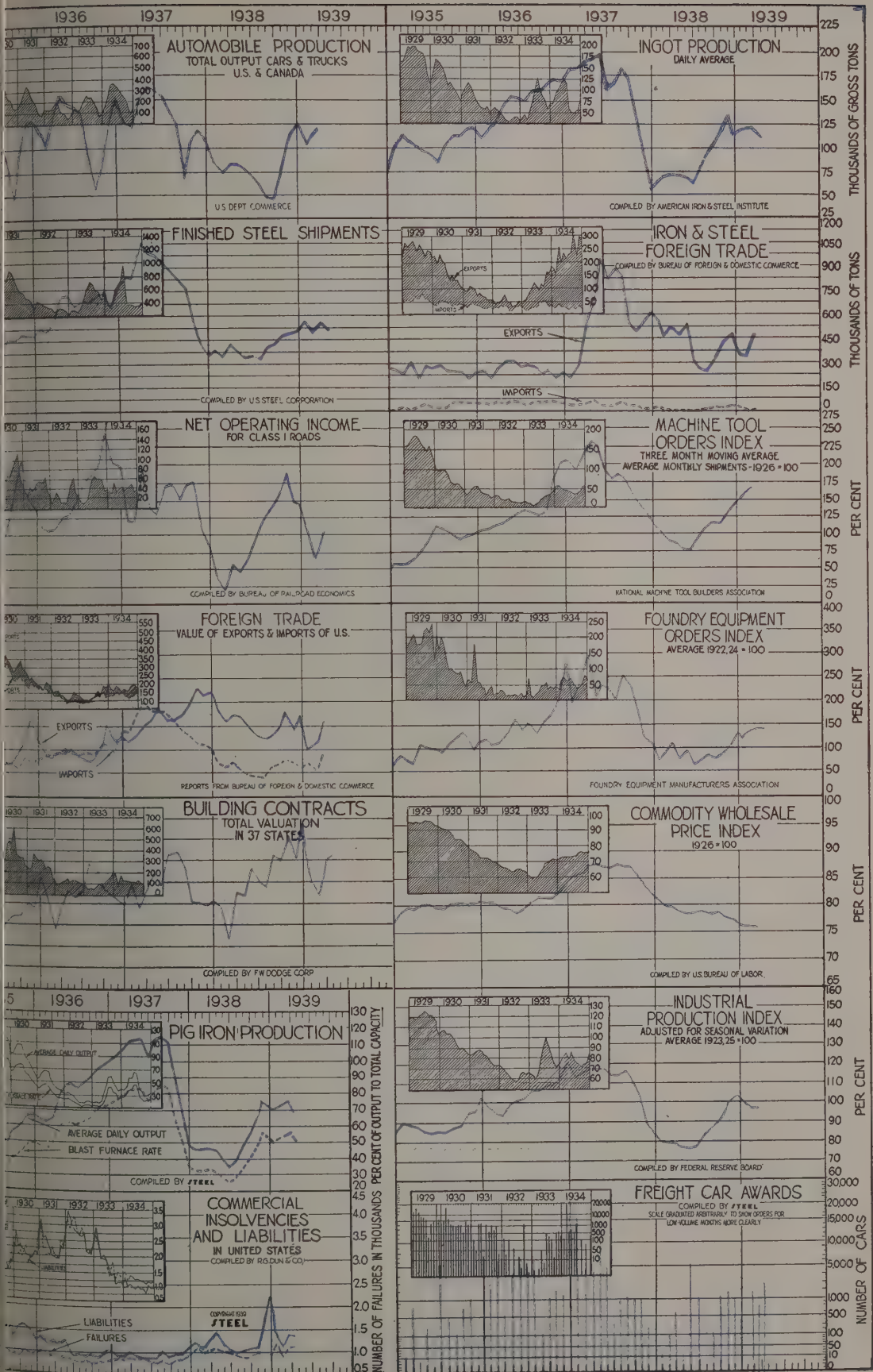
duction. April's showing followed a similar factory result in March, when there was more than a seasonal rise over the preceding months. Orders numbered 1140 last month with current sales of \$17,492,000, compared with 1123, and \$16,700,000 in March. Failures during April were only slightly less than the comparable month last year.

RAILWAY OPERATING INCOME UP SHARPLY

Net operating income for class I railroad amounted to \$34,316,888, up from \$18,590,734 in February and more than double the net income of \$14,728,275 recorded in March, 1938. Return on property investment in March was 0.41 per cent, compared with 0.74 per cent in the same month last year. For the first quarter net operating income totaled \$85,808,342, or 1.78 per cent return on property invested. This compares with \$19,963,178, or 0.41 per cent on invested property, for the same quarter last year. A reversal of the recent upturn in earnings in February and March is indicated for April. The lower level of freight traffic resulting from the bituminous coal strike.



| Week ending | Steelworks | | | | Electric Power | | | Freight Car | | | | | Weekly Outp |
|--------------|----------------|------|------|-------|----------------|-------|-------|-------------------|------|------|------|-------|-------------|
| | Operating Rate | | | | Output | | | Loadings | | | | | |
| | Per Cent | | | | Million KWH | | | Thousands of Cars | | | | | |
| 1939 | 1938 | 1932 | 1929 | 1939 | 1938 | 1932 | 1929 | 1939 | 1938 | 1932 | 1929 | 1939 | |
| Jan. 21..... | 51.5 | 30.5 | 27.0 | 83.0 | 2,289 | 2,108 | 1,598 | 1,737 | 590 | 570 | 562 | 932 | 90,205 |
| Jan. 28..... | 51.5 | 33.0 | 28.5 | 84.0 | 2,292 | 2,098 | 1,588 | 1,717 | 594 | 553 | 560 | 926 | 89,200 |
| Feb. 4..... | 53.0 | 31.0 | 28.5 | 85.0 | 2,287 | 2,082 | 1,588 | 1,728 | 577 | 564 | 575 | 947 | 79,410 |
| Feb. 11..... | 54.0 | 30.0 | 27.0 | 86.0 | 2,268 | 2,052 | 1,578 | 1,726 | 580 | 543 | 562 | 956 | 84,500 |
| Feb. 18..... | 55.0 | 31.0 | 25.0 | 88.0 | 2,249 | 2,059 | 1,545 | 1,718 | 580 | 536 | 572 | 958 | 79,860 |
| Feb. 25..... | 55.0 | 30.5 | 25.0 | 83.0 | 2,226 | 2,031 | 1,512 | 1,699 | 561 | 512 | 636 | 907 | 75,660 |
| Mar. 4..... | 56.0 | 29.5 | 25.0 | 89.5 | 2,244 | 2,036 | 1,519 | 1,707 | 599 | 553 | 560 | 977 | 78,705 |
| Mar. 11..... | 56.5 | 30.0 | 25.5 | 94.5 | 2,238 | 2,015 | 1,538 | 1,703 | 592 | 557 | 575 | 946 | 84,095 |
| Mar. 18..... | 56.5 | 32.0 | 24.5 | 94.5 | 2,225 | 2,018 | 1,537 | 1,687 | 594 | 540 | 585 | 958 | 86,725 |
| Mar. 25..... | 55.5 | 35.0 | 23.0 | 94.5 | 2,199 | 1,975 | 1,514 | 1,683 | 605 | 573 | 561 | 961 | 89,400 |
| Apr. 1..... | 54.5 | 36.0 | 23.0 | 95.0 | 1,210 | 1,979 | 1,480 | 1,680 | 604 | 523 | 545 | 967 | 85,980 |
| Apr. 8..... | 53.5 | 32.0 | 22.0 | 95.5 | 2,173 | 1,990 | 1,465 | 1,663 | 535 | 522 | 545 | 956 | 87,019 |
| Apr. 15..... | 51.5 | 32.0 | 22.0 | 96.0 | 2,171 | 1,958 | 1,480 | 1,697 | 548 | 538 | 567 | 972 | 88,050 |
| Apr. 22..... | 50.5 | 32.5 | 23.0 | 98.0 | 2,199 | 1,951 | 1,469 | 1,709 | 559 | 524 | 562 | 1,004 | 90,280 |
| Apr. 29..... | 49.0 | 32.0 | 24.0 | 101.0 | 2,183 | 1,939 | 1,445 | 1,700 | 586 | 543 | 554 | 1,052 | 86,640 |
| May 6..... | 49.0 | 31.0 | 24.0 | 97.0 | 2,164 | 1,939 | 1,429 | 1,688 | 573 | 536 | 534 | 1,050 | 71,420 |
| May 13..... | 47.0 | 30.0 | 24.0 | 97.0 | 2,171 | 1,968 | 1,436 | 1,698 | 555 | 542 | 517 | 1,048 | 72,375 |



Forum on



■ WHEN H. W. Prentis, Jr. makes the statement—as he does in this Forum article—that the heavy tolls industry is obliged to pay in the form of taxation, uncertainties caused by experimental legislation, and the generally higher cost of doing business, are major causes for discouragement to industrial enterprise, he speaks from experience and from the heart.

Mr. Prentis, president of the Armstrong Cork Co., Lancaster, Pa., and a vice president of the National Association of Manufacturers, is one of the most powerful factors in making known to the public the true state of affairs affecting American business today, and the vast possibilities ahead if and when artificial barriers to business revival are lifted. Mr. Prentis certainly is no pessimist. Consider this statement:

"Even as I write, the test tubes in some laboratory are offering some challenging new frontier for industry to penetrate. Scarcely a day passes that the press does not make reference to some new wonder of science. Month after month some new potential industry is born. It is realization of this fact that spurs industry forward."

—The Editors

■ Filed away in the "hope chests" of industry's development departments, are yellowing pages of projects yet to be undertaken. Every industry has them. They are not haphazard tree-planting programs or quickly conceived ideas designed to give a few hours temporary employment to a phlegmatic section of the population which asks no more than that.

These unfulfilled projects of industry—so long held in abeyance—are projects of progress. They call for additions to existing plants; plans for new factories; installation of newer machinery to replace obsolescent equipment; extension of office facilities to relieve congestion and increase efficiency. Locked in the vaults of many research laboratories are developments that have yet to see the light of day. Although research goes on, industry does not

catch up. Countless projects repose in the archives of many a concern—waiting the day where the expectation of profit from business ventures will be great enough for men to carry out their plans.

The one individual who suffers the greatest personal hardship from this static condition is the American workman. Just as labor finds small demand for its services, so does capital lack a profitable market. Once the reward for capital investment can be made attractive again, such funds will readily create the means of increased employment.

Harold G. Moulton, president of Brookings institution, has said:

"The restoration of the free flow of money through the capital market into the expansion of productive plant and equipment is the central problem in economic reconstruction. We do not need any new industries

to lead us from depression or to provide outlets for the savings of the people. All that we need is economic and political conditions favorable to the resumption of capital replacement and expansion of existing industries. The cost of capital required to replace depreciated and obsolete equipment and to raise standards of living even back to the level is sufficient not to provide outlets for available savings but also to aggravate unemployment."

Taxes Excess

The heavy tolls industry has to pay in the form of depreciation, the uncertainty of experimental legislation, the generally higher cost of doing business—all have discouraged investment of funds in new enterprise.

The experience of our company illustrates the tax borne by industry. The taxes for 1938 of \$1,126,433 disbursed to the owners in dividends during the year. The taxes amount to 1.5% share of common stock for every domestic corporation to \$121.90 for each stockholder.

The cost of keeping involves a substantial ing 1938 ten hundred had to be prepared to Federal, state and authorities compared ing 1937 and about 350 greatly increased tax American enterprise is upon to shoulder has ably handicapped indus try to restore employ

With the greatest ma

have today half the un-
 and women of all the
 industrial countries of
 Our Federal debt has
 24 billion dollars since
 analysis of the cost of gov-
 icates that more than
 the national income is
 the expense of main-
 governmental activities.
 World War, the cost of
 was considerably below
 of the national income.
 of Federal employees
 beneficiaries has in-
 rapidly that today about
 persons are receiving
 of the Government. Gov-
 intervention in agriculture
 no solution of the far-
 We find the Federal Gov-
 gradually encroaching on the
 industry and already
 some fields of business.

Still Has Frontiers

of failure maintain
 that we are slipping in-
 that industry can no
 expected to keep our
 work. They assert that
 w, if any, new industrial
 conquer. Such statements
 Similar predictions
 made time after time in
 Even as I write, the test
 in the laboratory are offer-
 challenging new frontier
 to penetrate. Scarcely
 that the press does not
 ence to some new won-
 ce. Month after month
 potential industry is born.
 realization of this fact that
 industry forward. By apply-
 its of scientific research,
 leaves the way for still
 standards of living for all
 Given the opportunity,
 industrial ingenuity can
 industries, new prod-
 processes and new ma-
 which will open new fields of
 for millions of people
 ing on public funds.
 is constantly studying
 means to provide contin-
 employment. How rapidly
 taking hold is evidenced
 serious programs adopted
 months by many com-
 pressure sustained incomes
 employees. With increas-
 one finds announce-
 such forward moves on
 corporations. Does this
 though industry was un-
 dodging, responsibility?
 his bespeak its new view-
 keeping pace with the
 times?
 of the enthusiasm with
 has attacked the problem
 ing greater security of in-
 its present employees, in-



H. W. Prentiss Jr.
 President
 Armstrong Cork Co.
 Lancaster, Pa.
 Vice President
 National Association of Manufacturers

dustry is eager to build new plants,
 to re-equip old ones, to make new
 products, to hire more men. All it
 asks is a chance to make a reason-
 able profit on such new investments,
 and some assurance that the "rules
 of the game" will not be changed in
 every inning. That chance may be-
 come a reality if recent government
 statements friendly to business can
 be translated into action. Nothing
 would restore business confidence
 more quickly than the positive con-
 viction that government is working
 actively for industrial recovery.
 With that assurance realized, "ven-
 ture" capital could see some hope

of profitable investment and the
 way for reemployment would be
 opened.

Announces Course In Metal Radiography

■ St. John X-Ray Service Inc., will
 conduct its fifteenth training course
 in metal radiography at its labora-
 tory, 30-20 Thomson avenue, Long
 Island City, N. Y., July 10-14. Pur-
 pose of the course is to teach how
 to make and interpret radiographs.
 Theory will be dealt with as briefly
 as possible, the influence of various
 factors upon results being demon-
 strated and discussed. Airplane in-
 spection will be included for the
 first time, this subject increasing in
 importance because of the expand-
 ing volume of plane production.

Course instruction will cover:
 Physics of X-rays, X-ray tubes, pro-
 ducing X-rays, intensity of X-rays,
 absorption of X-rays, scattering of
 X-rays, diaphragms, centering of
 tube; intensifying screens, correct
 exposure, thickness and nature of
 objects, photographic process, re-
 producing negatives, definition and
 contrast in negatives; specification
 for casting inspection, practical
 work on ferrous and nonferrous
 castings, interpretation of defects in
 castings; weld inspection, interpre-
 tation of defects in welded struc-
 tures, boiler code discussion, prac-
 tical work; X-ray equipment instal-
 lations, field inspection, aircraft
 practice, operating and cost data;
 gamma-ray inspection.

Inside of Pipe Given Visual Inspection



■ Closer inspection of oil country goods has brought into play Tube-wall-scope
 and the Magnaflux method to inspect interior and exterior surfaces of seam-
 less steel pipe. The tube-wall-scope (left) resembles a long telescope and
 has an adjustable-focus eyepiece, lenses, reflectors and a powerful light to
 permit full inspection inside of pipe. Scope magnifies defects and calibration
 on barrel help spot location

Metallic powder or solution is placed on pipe while in a magnetic field in the
 Magnaflux method (right). Defects become apparent as red powder is col-
 lected at a flaw by magnetic action. Photographs courtesy Jones & Laughlin
 Steel Corp., Pittsburgh

POWER Control

Greatly reduced power costs are a possible result of adequately studying and controlling demands for power in many steel mills. Examples illustrate factors involved

■ THERE IS a class of instruments which has been coming into use only during the past relatively few years from which large returns can be secured. These are control units that help control costs chiefly through proper timing of various functions in manufacturing.

It is remarkable how seldom the timing of a sequence of operations is arranged to produce the lowest costs, and how quickly improper timing increases industrial costs. This phase of costs warrants care-

Abstracted from a paper presented at the recent instrumentation conference, Carnegie Institute of Technology, Pittsburgh.

By W. B. SKINKLE

Secretary and Engineer
Pittsburgh District Power
Committee
Subsidiary Companies of
United States Steel Corp.
Pittsburgh

ful consideration by operating men.

As an example, consider the cost of purchased utility power. The rate schedule of almost any public utility company can be subjected to exact mathematical analysis and then to graphical analysis similar to Fig. 1. In this graph, the "Total

Cost of Power in Dollars is used as the vertical axis, the "Energy Consumed in kilowatt Hours Per Month" as the horizontal ordinate. The horizontal ordinate is divided into intervals of lines constituting the graph shows how the power bill increases with continued use of energy under a particular demand. This is done intentionally to make the intervals between demand lines as drawn for the illustrating the principle of easy reading.

The chart shows the kilowatt hours of energy purchased during a given demand of 5000 kilowatts. The resulting power bill has been about \$17,400.00 for the month. The chart also shows the number of kilowatt hours purchased under ideal conditions per cent load factor, would have decreased kilovolt amperes to less than 2000 kilovolt amperes shown at "F," and this would have decreased the bill to about \$12,000 a month of approximately \$12,000 or about 30 per cent in the bill.

While the use of the perfect conditions almost if not actually

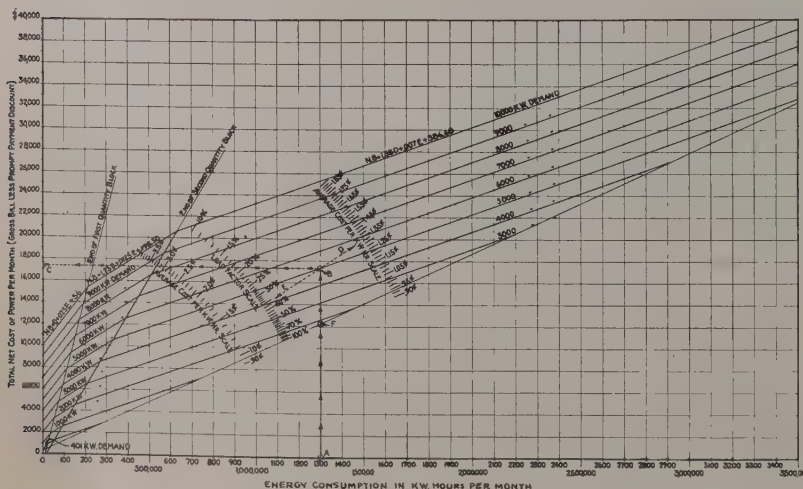


Fig. 1—Chart showing graphical analysis of power rate schedule

approach this perfect in many cases will result in cost reductions. The with actual examples, method of determining the based on a utility by a through a demand measurement which draws a. The longest of these rarily used as the base demand charge is cal. demand charge ranges \$2.50 per kilowatt per constitutes from 40 to 75 the total power bill.

Shows Demand Abuse

ample of abuse of de- poor timing of produc- 2. This shows short of the demand chart that hly demand on a manu- property, and covers the at of twelve months of . A study of the plant at the required produc- be maintained without ble or interruption at ts. This demand was e controlled demand," and on the chart is shown y horizontal lines so s of all these arcs were and made into a curve, der the curve would rep- kilowatt hours of energy while the kilowatt hours would in turn represent measure of the produc- plant. Now the habits of plant who start "campaigns"

toward the end of each month and insist that their department heads "get that order out and into this month's business." A glance at the first line of this chart visualizes such a "campaign" in this works and the response to the pressure. However, by using a demand meter and analyzing the chart, the false economy is evident. Increased costs due to improper timing are clearly apparent. The area as indicated by the demand lines above the "controlled demand" did not increase the plant production for the month more than a small fraction of 1 per cent, but the excess demand thus created increased the power bill for the month by \$2220. While no study was made to determine the exact increase of production due to this increased demand, it is doubtful whether the total value of the added production was enough to offset the increase in the power bill. The other lines show similar increases in power costs. Note in line (2) where a 1½-hour peak added \$2430 to the month's bill. In line (3) a 1¼-hour peak added \$3105 to the month's bill. In line (4) a "good" day's production added \$2430 to the bill, and in line (5) a short time peak due to a turbine breakdown when the entire load was thrown onto the utility added \$5130 to the month's bill, most of this being added during one hour of the peak. Similarly, in line (6) a peak of only 1½-hours added \$4725 to the month's bill. The energy shown in

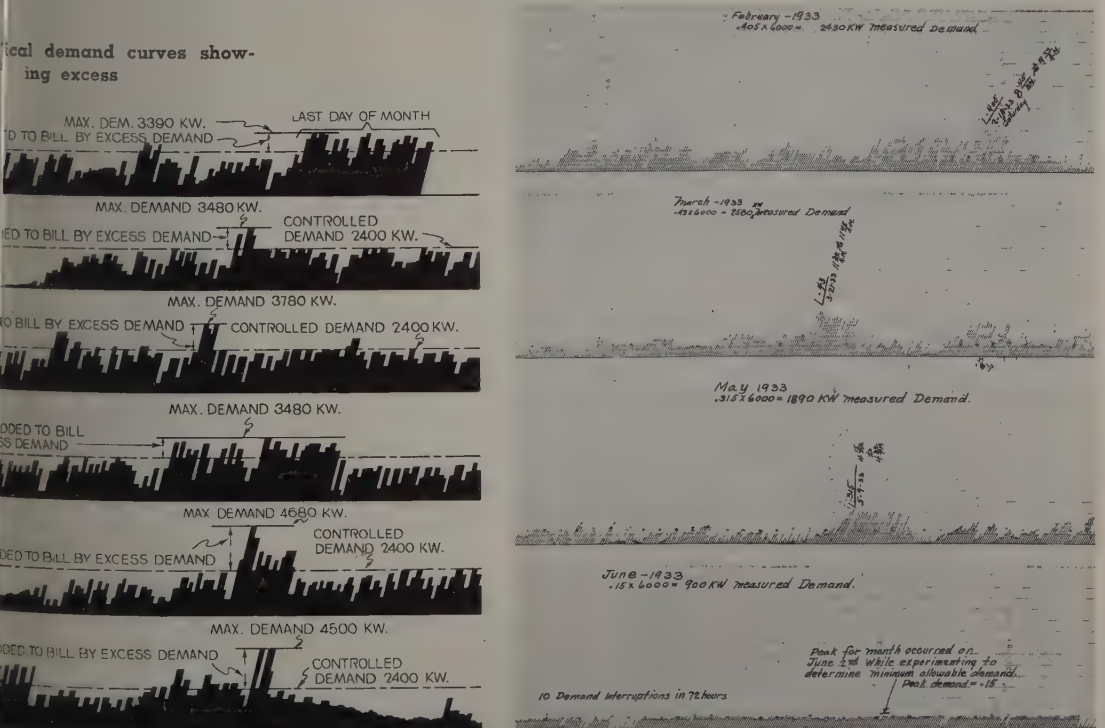
the peak of line (5) was calculated and divided into the increase in cost due to the peak. This extra energy was found to have cost nearly \$1.19 per kilowatt hour. Having seen what poor timing is capable of adding to the costs of power, it is appropriate to examine the results accomplished by the installation of a few relatively simple instruments.

Low Cost of Demand Limiter

A standard demand limiter costing approximately \$300 was installed on the incoming utility power line, and some standard "time switches" costing about \$30 each were installed near the heating furnaces. The functions of the demand meter were limited to the sounding of a siren near the end of the demand interval (in this case 15 minutes) whenever the demand threatened to pass a predetermined maximum that had been set by the plant officials, at the beginning of the month as sufficient to carry the expected production for that month. The function of the time switches was to illuminate a red light at the heating furnaces so the heater would draw blooms at not in excess of the maximum rate at which they could be handled by the sequence of mills that formed the material, and in this way prevent partly rolled products from lying on the runout ta-

Fig. 3—Bottom curve shows controlled demand

Typical demand curves showing excess



bles and cooling during the rolling process.

The charts in Fig. 3 show the results.

The first three lines at the top of the chart show demands for typical months immediately preceding the installation of the control instruments. The bottom line is typical of demands for the first month the control equipment was in operation. Owing to some special load conditions, it suddenly became necessary to rush the installation, which was not completed until late the night of the 31st of the month, and it was placed in regular operation early the next morning. One demand interval "got away" from the operators on the second day, as indicated by the note on the chart.

Maximum Demand Reduced

However, the maximum demand was reduced from 1890 kilowatts for the preceding month to 900 kilowatts for the first month that the control instruments were in service. Another interesting feature was that during the preceding month, the mill using 1890 kilowatts of demand had 15,000 pounds of scrap, while under the controlled demand of 900 kilowatts the mill cut its scrap loss in half. Incidentally, a careful estimate showed that \$500 total investment in instruments reduced the

power bill approximately \$7000 the first month. By the end of the first year, approximately \$78,600 had been saved in power costs for that year. This last larger cost reduction was due to a large increase in business and a considerable extension of motorized units in the works, which resulted in over 50 per cent increase in the use of electric energy.

In the final analysis, the object of all control instruments is cost reduction through direct savings, the prevention of destruction of equipment under control, or the reduction of losses through rejection of unsatisfactory product. The number of examples of cost reduction due to instrument control is almost unlimited.

Requirements for electric power in the steel industry have been changing radically during the last few years. Power systems now absorb loads that were hardly thought possible as little as ten years ago. The new continuous mills producing flat rolled products such as plate and sheet present control problems that are important to both the engineer and the instrument maker.

It was not so long ago that a heavy bite taken by a mill that put from 6000 to 10,000 kilowatt peak load on a system was considered a large peak. Such peaks are en-

countered during the passes on ingots or what happens when suddenly added to or removed from the electric system.

The sudden addition of an electric system is by the kinetic energy of high speed rotating turbine and generator, say by the "flywheel" rotating parts. These store the initial energy at high speed. This speed requires an adjustment of governor to admit more steam to maintain equilibrium is restored. Actions take place when the flywheel is moved.

Flywheels can give a maximum of about 10 per cent. If the load is sustained over a period, flywheel energy is used efficiently.

Frequency Measure

In an alternating current system the frequency is an indication of the speed of the generator. It is illustrated by Fig. 4. The frequency on a steel mill system on July 4 was 1500 RPM. The rolling units were shut down, only crane lifts and caused changes in load. The frequency of the band is a measure of the sensitivity of the governor. Little peaks and valleys in the frequency are noted.

Contrast the uniform frequency shown on this chart with Fig. 5 which shows a working day with normal load variations. Here the frequency is a little broader, peaks are more pronounced.

When the large 100,000 kilowatt turbine at Homestead was added to the system, no additional governor capacity was added. The four continuous steel mills in all stands time. It was estimated that the total load addition through the system would be from 10,000 kilowatts at its peak load for approximately 10 seconds. The effect of the system speeds is a glance at Fig. 6.

Contrast this speed variation with that of the utility company. Fig. 7. Usual variation in the chart is plus or minus

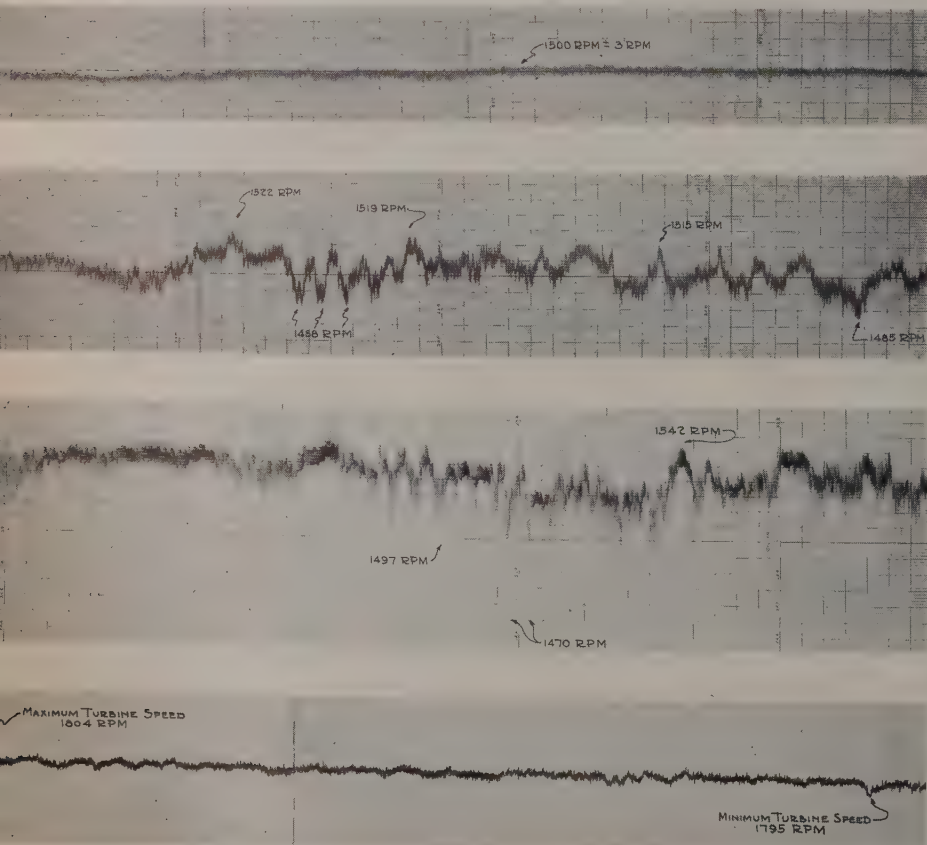


Fig. 4. (Top)—Steady control plus or minus 3 revolution variation. Fig. 5. (Next)—Speed varies from 1522 to 1485 revolutions per minute. Fig. 6. (Bottom)—Variation from 1542 to 1470 RPM noted here. Fig. 7. (Bottom)—Close regulation maintained by electric company.

revolutions per minute of 1800 revolutions per minute. Top speed during the test was 1804 revolutions per minute. The lowest speed was 1800 revolutions per minute.

One of such high speeds is a narrow limits, day after day is a remarkable testimony that can be done with such equipment when necessary. Companies have reached such a perfection only within a few years. It would not be surprising if the independent power companies of the steel industry to approach such accuracy as would involve unjustified investments in additional equipment. Independent power companies have to double present equipment to control frequent such narrow limits.

Engineers say that a 30,000-kilowatt load applied in 10 seconds is as much as 27,000 pounds of steam at 500 miles distance, they state that if the load is removed suddenly, it will require 15 seconds to even out surges set up before normal operation is restored.

When setting up independent control, particularly for an independent system, it is essential that the load be reached regardless of a range of variation permitted in the equipment. After this has been determined, the satisfactory performance of the system. After this has been determined, the satisfactory performance of the system. After this has been determined, the satisfactory performance of the system.

Load For Worst Load

Independent power systems are required to absorb violent load fluctuations. It is thought possible that a power system must be prepared to successfully handle the worst load conditions. Provision must be made to guard against the turbine with water from the boiler.

Showing load curves representing the worst conditions that will have to be met by the new United States Steel Corp. mill at Irvin, N.C. The loads will be imposed by the use of wide alloy steel sheets.

The graph represents one type of loading. While 8 shows the electric load and violent fluctuations by the six finishing mills of the continuous mill, the

requirements with peaks from rolling loads

chart also represents exactly the flow of steam which the boilers will be required to deliver to the turbo-generators to enable them to carry the load. In these peak loads, the effect of each of the six continuous stands is clearly shown.

Steam Flow Sharply Affected

Each peak is approximately 36 seconds long. A 30,000-kilowatt peak is applied to the system in 16 seconds. While peak load only represents 185 kilowatt hours of work, the boilers must evaporate 1855 pounds of additional water during the 36-second interval. Average increase in steam flow over duration of the peak is at a rate of 185,500 pounds of steam per hour, but actual maximum rate of flow at top of peak requires an increased flow equal to an additional 300,000 pounds per hour. Fig. 9 shows a still more violent change where the boilers will be called upon to increase the flow of steam at the rate of 380,000 pounds of steam per hour in 8 seconds.

If at some later date, a second narrower strip mill be installed, time studies show that it will not be practical to stagger the load peaks of the two mills without holding production of the faster mill down to the speed of the slower mill. Peaks of the two mills would, therefore, coincide at times.

Duration of peak would be about 46 seconds. It will take approximately 2544 pounds of additional water flashed into steam during these 46 seconds to increase the rate of steam flow to 420,000 pounds per hour.

It would take a large battery of boilers to flash 2544 pounds of additional water into steam in 46 seconds. To sustain the loss in pressure from such a cycle would be impractical. Heat must be supplied from fuel for at least a large part of the evaporation necessary to carry these peaks. However, when a

problem of this kind is recognized during the early design stages, no particular trouble should be encountered in designing a plant to meet the conditions imposed by the service.

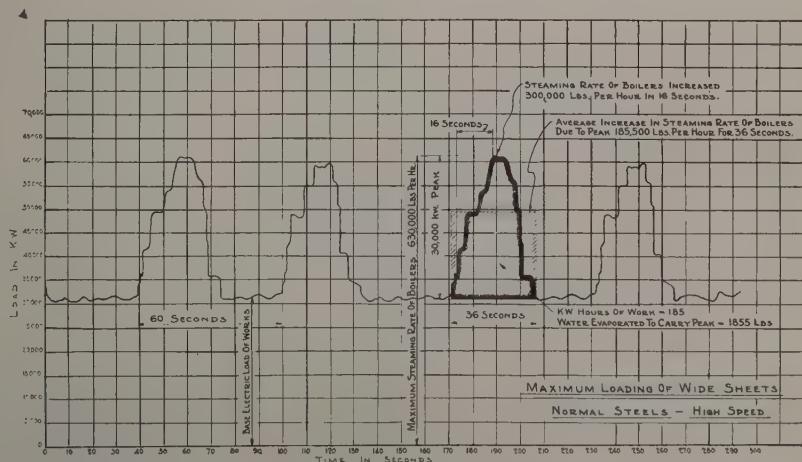
The size and sudden occurrence of peaks such as occur in continuous rolling mill operation caused considerable worry among utility operators as to the effect of such loads on their systems. This can be readily understood when we recall the extremely close regulation of speeds normally maintained by the utility operators.

Consequently, it took careful investigation and discussion of the problem before it was possible to convince utility operators that a station could be built to operate in parallel with a utility system without throwing peak loads of more than 10,000 kilovolt amperes on the utility system.

Parallel Power Supply

This can be accomplished in two ways. One is to build the station with nearly double the number of boilers and perhaps twice the generating capacity required, so that in the normal load division between parallel operating systems the station closest to the load would absorb the larger part of the peaks. The other way of handling the situation involves a smaller station, but one equipped with suitable control instruments designed to force the company-owned station close to the point of load application to carry the larger part of the peak loads.

The general idea of such a control system and its instruments is not particularly complicated. The turbine must be designed with overload valves which will admit large quantities of steam to the unit regardless of economy. The small percentage of the total time that steam is supplied at these uneconomical rates makes steam economy



at overload a matter of secondary importance.

The generator must be designed to take care of the heat caused by these overloads and have pilot excitation that will permit it to pick up the load with the required rapidity.

Next, the drop in steam pressure through the superheater tubes and piping at normal and maximum rates of steam flow must be investigated carefully. This may be a 25-pound pressure loss at normal rates of flow and a 75-pound loss at maximum rates of flow.

Allow for Pressure Loss

Although every effort will be made to supply fuel to carry the heavy peaks, there is a time element in heat absorption which must be made up by flashing water into steam through pressure loss in the boiler. Suppose, therefore, that an allowance of 175 pounds pressure loss during peaks can be conceded. Then, if the turbine required steam at 700 pounds, the boiler would have to carry 950 pounds steam pressure.

To prevent the 950-pound pressure in the boiler drums from reaching the turbine, a pressure reducing mechanism in the form of a quick-acting butterfly valve is placed between the boiler drums and the superheater. The opening in this valve is controlled by the steam pressure at the turbine. When the turbine valves open and draw steam faster than it is being supplied, the resulting drop in pressure automatically opens the butterfly valve and the large reserve pressure in the boiler drums immediately supplies the extra steam required to meet the peak load.

The fuel supply to the boilers will respond to the same operating mechanism. Governors on the tur-

bine will have auxiliary remote controls that will be able to increase or decrease load carried by unit.

In the substation receiving utility current are two relays, one a maximum and the other a minimum. The maximum relay will normally be open and will close only when an inrush of current exceeds some predetermined maximum, while the minimum relay will normally remain closed, opening only when the incoming utility current drops below the predetermined minimum.

Should the maximum relay close due to a heavy increase in current supplied to meet a large peak, a timing mechanism starts increasing the load carried by the turbo-generator in 5000 kilowatt-steps at say two-second intervals until the incoming utility current is restored to its predetermined rate of flow. Should the minimum relay open because of loss of load, load on the turbine is relieved in the reverse of the manner in which it was increased.

Base Load Controlled

Base load carried by the turbine is determined, first, by the minimum limits set for the turbine control and, second, by the amperage at which the minimum relay is set to open.

When extremely close control is required, automatic control instruments now are essential. They eliminate the human equation, are always on the job and require a minimum of attention. When properly designed, modern control instruments can detect a change in conditions and automatically make the changes necessary to correct the situation before the average man would even notice that attention was necessary. Their automatic mechanical accuracy assures economy. Consequently, it will be found that an investment in automatic control instruments, made after a careful study of operating needs and

conditions, will not only be more uniform and higher quality product but also will result in substantial saving in operating costs as well.

Scientific Controls To Bessemer Steel

■ For the first time scientific controls are being applied to the production of steel by the Bessemer process. The technique involves the use of electric cells. The Bessemer process, as it is called, is the result of research by the electrical department of Jones & Laughlin Steel Corp., Pittsburgh, Pa., at supplementing the heat of the blower so that the steel of the proper "end point" can be produced without the defects of fatigue, inaccuracy of physical condition or other variables. In conjunction with the electric cells, and as a part of the Bessemer system, a complete installation provides accurate regulating blowing conditions.

The method, known as "flame control," has been successful in achieving uniformity. Exhaustive tests, were made and the company believes the method will lead to new applications of Bessemer steel where uniformity is required, also that it will materially enhance the economic value of the Bessemer process and influence the future of steelmaking procedure.

The method is one of the many which Jones & Laughlin has applied for patents.

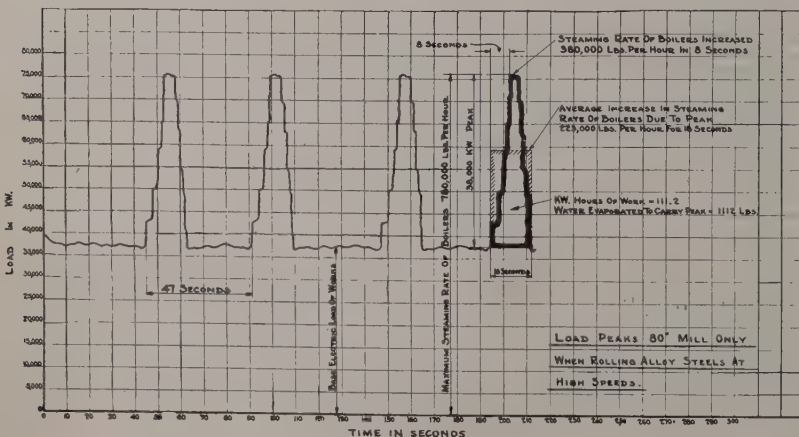
Beryllium Alloys In Primary Shapes

■ New facilities for the special production of heat treating alloys in rod, strip and other forms are announced by the Aluminum Corp. of Pennsylvania. Among alloys now available are shapes are 2 to 2.25 percent beryllium copper, beryllium-copper, beryllium-chromium-copper, beryllium-nickel.

One-Coat Primer Liquid Rubber

■ Several hours drying is claimed by Self-Vulcanizing Rubber Co., 605 West Madison boulevard, Chicago, for its single-coat liquid rubber, Self-vulc M-A, that dries to a solid surface in an hour. It stands 212 degrees Fahrenheit, is used to bond rubber to concrete, glass, tile, etc. It is used for rustproofs and waterproof surfaces. One gallon covers 250 square feet.

Fig. 9—Much sharper and higher peaks produced when rolling alloy steels at high speeds on an 80-inch mill





*Marching along
together*

STEEL.. STYLE.... COMFORT

Sheets - Plates - Pipe and Tubular
Products - Conduit - Tin Plate - Bars
Rods - Wire - Nails - Unions - Tie
Plates and Spikes

Except for *steel*, the shoes we wear would be little better than medieval sandals, with their shapeless ugliness and destruction of foot health.

The arch which assures comfort, safety, lasting appearance, is made by a steel brace concealed in the leather. Heels are possible because of steel nails. Steel eyelets keep the laces from tearing the leather. The laces thread easily because of steel tips--to say nothing of the steel machinery vital to processing the leather and making the shoes themselves.

It takes almost 100 pieces of steel to make most pairs of modern shoes, and they are only a small fraction of the thousands and thousands of pieces of steel you use every day to make life comfortable and safe. Steel makes possible your electric light, home heating plant, canned food delicacies, automobile, office building and factory, railroad--in fact steel makes possible the standard of living on which civilization depends.

For almost every one of this multitude of uses a special steel is required, and Youngstown maintains a great laboratory and special staffs of research and field experts to find exactly the right steel for every modern use.

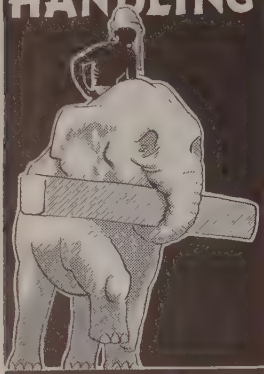
THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of Carbon and Alloy Steels

General Offices
YOUNGSTOWN, OHIO



YOUNGSTOWN



Cupola Charging

Rising material and labor costs, fixed work hours, heavier taxes and keen competition make the task of producing good castings at a profit increasingly difficult. Mechanization of cupola charging, as outlined here, may help greatly.

By A. W. GREGG

Foundry Engineer
Whiting Corp.
Harvey, Ill.

■ NEED FOR further mechanization in the foundry industry is pressing, particularly in the charging and melting department which frequently is out of step with other phases of foundry operation such as molding, cleaning and sand preparation.

Every problem of mechanical charging involves fundamental prin-

ciples which must be analyzed intelligently if maximum benefit is to be derived from the equipment. Principal factors include:

Analysis of present melting practice. Every step should be studied with special regard to its relation to every other part of the process. Only a true picture of present practice and conditions will permit the designer of charging equipment to interpret correctly the needs and possibilities of any given problem.

Analysis of material handling practice. This phase of operation, particularly in large plants with heavy tonnage, holds tremendous possibilities for cost reduction. Too

frequently it has received no consideration. The factors are important: incoming material unloaded; bins are used, how large bins are used, how what size for coke, pig iron and limestone; are charges elevated to cupola house by electric car or other means; if yard crane is used, are capacity and speed of charging tracks be moved; how many men are employed making up charges, neglecting those on the charging floor; electric current available for charging equipment.

Drawings Help

Layout of present building facilities. If not already drawings should be made of building and yard space to determine location of equipment. Given as detailed above, efficient charging apparatus designed. First, a cycle of operation to fit local requirements established. For example, a foundry requires hot metal at rate of 20 tons per hour (calculations are based on the per hour). With iron charges 2000 pounds each and coke and put in together, it is necessary to make 20 charges per hour every 3 minutes. Therefore, a cycle of operation is allowed for a complete cycle. With this cycle it is necessary to have greatest possible degree of mechanization.

Here a bucket loading station is indicated under material bins. It permits easy and rapid making of steel charges and so helps reduce handling costs.



charger is particularly for small and medium size raw materials are near where hoisting mechanism is completely and mounted level, out of the way. Quite a building is unnecessary

for unloading material. Making up charges would be simplified; also overhead cranes, together with a tow-bar to move charging buckets to points to scale and pickup point. For the tonnage involved, a crane mechanical charger would be a good choice. Every movement of material must be calculated and all operations synchronized. Speeds of all handling must be determined so as to meet the requirements for a scale every 3 minutes.

The equipment, labor requirements would be three men distributed as follows: One on the charging platform, one on the ground to handle stone and operate the device, and one on the scale. No one would be on the charging platform. The charging platform would be any other than a small one for the convenience of a tender.

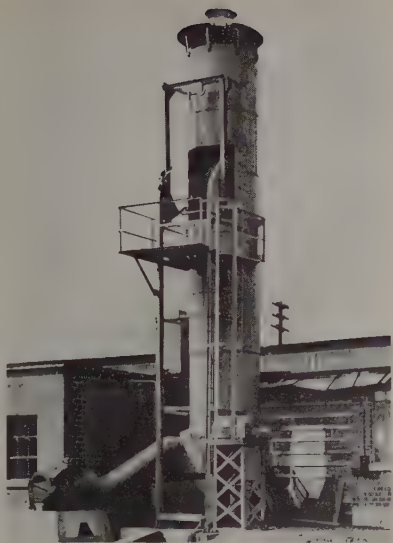
Foundry May Benefit

Calculations should be made for any size foundry, although for smaller tonnages the problem would be more simple. For an average foundry making 5 tons per hour there would be justification for electric charging cranes. Problem of car and inclined loader as a simpler type of charger would be the maximum benefit.

A large foundry with heavy tonnage justifies a higher degree of mechanization. A small plant with relatively small daily heats. A suitable system must be maintained because of the investment cost of mechanization and probable savings derived.

There are certain definite benefits any mechanical charging system would produce. These are: **Production.** Exact figures cannot be given on this item as no two plants have the same conditions. **Safety.** Handling heavy tonnage direct saving in labor is a considerable figure. In small plants it may be less important

scale car with cone bottom bucket is in position under ready to receive a charge of coke



but in all cases the work is made much easier and more agreeable for the men.

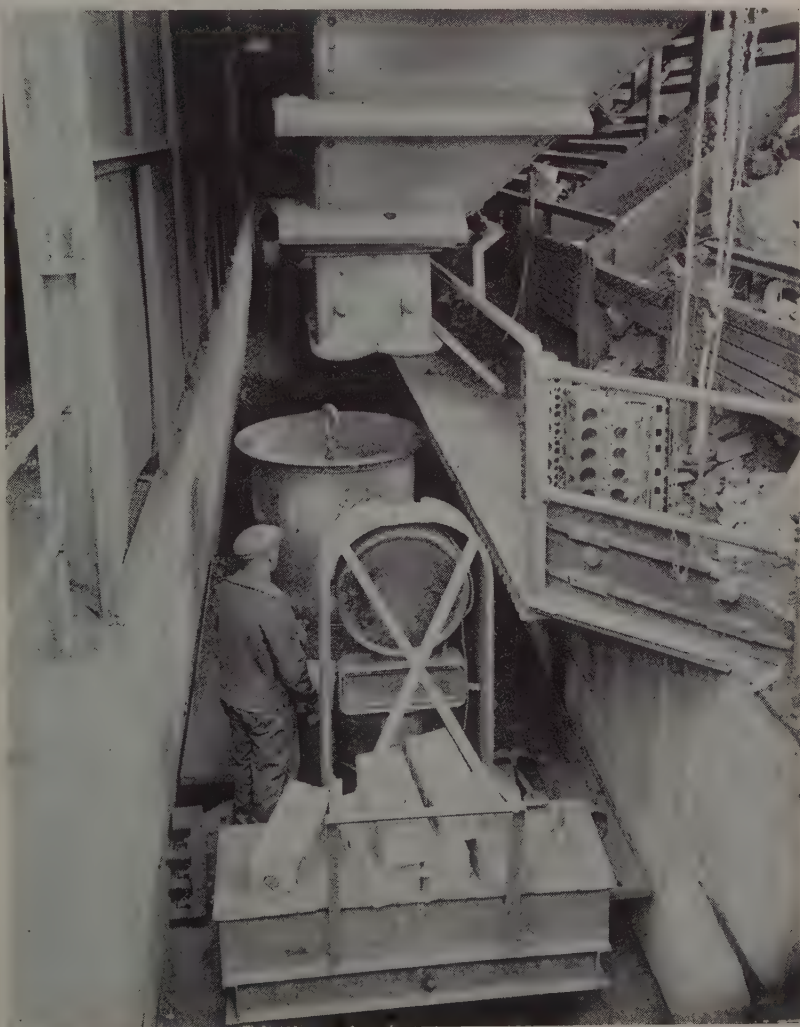
Better melting practice. Experi-

ence has shown that greater care exercised in weighing charges accurately and more scientific handling result in improved melting practice. Consequently supervision is simplified and the man responsible for the whole plant can devote a larger portion of his time to other departments. Repeated instances have occurred where the morale throughout the plant has been raised and a general improvement effected, all of which resulted in lowering the net cost of production.

Better working conditions. Removing the men from the charging floor immediately solves a real problem. Hand charging always is disagreeable work and in the summer months frequently presents a problem. Mechanical charging definitely solves that problem.

Safety. Elimination of manual handling of pig, scrap and other materials through installation of properly designed mechanical equipment contributes directly to the safety of all concerned. With no men on the charging floor, there is considerable

(Please turn to Page 78)





Pickling Process

Method of preparing steel surfaces assures clean metal and an excellent bond for paint, is already in use on fabricated steel for oil and water storage tanks

■ NOT LONG ago, Chicago Bridge & Iron Co., Chicago, built a plant in connection with its Greenville, Pa., shops to pickle and finish large steel plates by a process not generally employed for material of such large bulk. This plant, Fig. 1, was designed primarily to handle fabricated steel for oil storage tanks. The process has now been extended to plates for elevated steel tanks and steel standpipes for storage of water as it has shown excellent results.

The steel plates are placed in the first vat which will accommodate three or four of the largest plates or the equivalent amount of structural material at one time. It contains a mild warm sulphuric acid solution for removal of mill scale. After a specified length of time the steel is lifted from this vat, allowed to drain and then dipped into the center vat which contains wash

water at the same temperature as the sulphuric acid solution. Thus any remaining sulphuric acid is washed from the metal.

Plates then are placed for a short time in the third vat, containing a phosphoric acid solution to which iron phosphate has been added. This solution, which is hot, removes all final traces of acid and leaves a thin coating of iron phosphate on the steel to form a good bond for the paint.

Plates Painted While Hot

Immediately on being taken from the phosphoric acid solution, the plates are placed in racks which hold them on edge. Here they are painted while still hot using a special red lead and graphite paint. The overlapping edges of the plate are left unpainted. After erection, the joints are cleaned thoroughly and given a primer coat. Damage to

the shop coat during erection also is touched up; the field coats are applied later.

This plant has produced good work. The sulphuric acid is received in tank cars, pumped to an elevated tank from which it flows to a mixing tank when the acid is replenished.

Contents of vats are changed at frequent intervals in a purpose. There is a constant flow of water from the center vat to keep the total acidity from increasing a specified maximum. Spent acids from the phosphoric vat are pumped through a neutralizing tank and dumped into a waste pond.

Vats are all heated to temperature by means of steam jets which are arranged to agitate the contents. A power house provides high pressure steam for this purpose.

Portable Covers Over Vats

Painted plates are protected from inclement weather by portable covers until thoroughly dry. The covers, which are 12 feet by 38 feet, are supported at one end on a 8-foot 8-inch high rail. When plates are being handled, the covers can be rolled aside easily from the racks or lifted by a crane when the weather is favorable.

This phosphoric acid pickling is a European process. Commercial plants utilizing this process have been in operation in Britain and on the continent for some time. Several major steel companies have installed pickling plants under widely varying conditions.



Fig. 1—New pickling plant showing rectangular vats in foreground.



Community Plate

Chest of Community Plate,
in Coronation design

...se of plating perfection...

...r cleaning with **ORTHOSIL**



IN COMMUNITY PLATE, made by Oneida Ltd., the silver plating must be as near perfection as skill and care can make it. It must be durable, for this ware may be passed down from one generation to the next. Above all, it must never peel.

Both the metal cleaning and the plating operations are performed in automatic machines. Oneida Ltd. has made a study of metal cleaners over a period of 25 years, and it is significant that after exhaustive tests Orthosil was selected for electrolytic cleaning. The results are an unusually thorough cleaning which permits perfect adhesion, and an appreciable saving in cost. In addition, because Orthosil is a basic alkali, no chemical mixture is required.

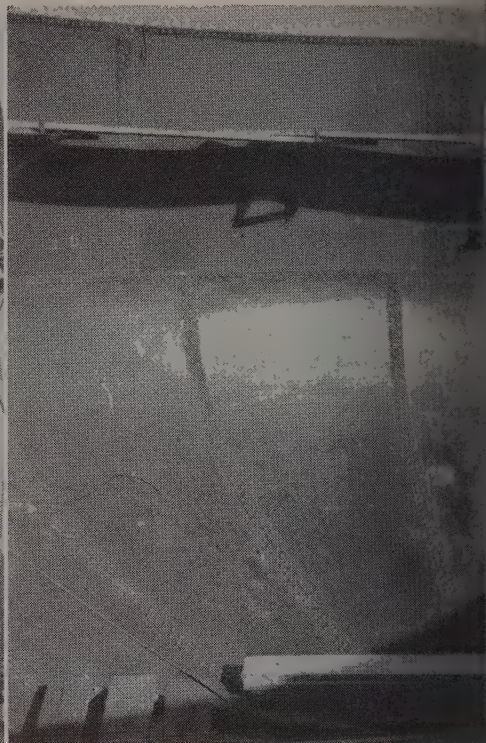
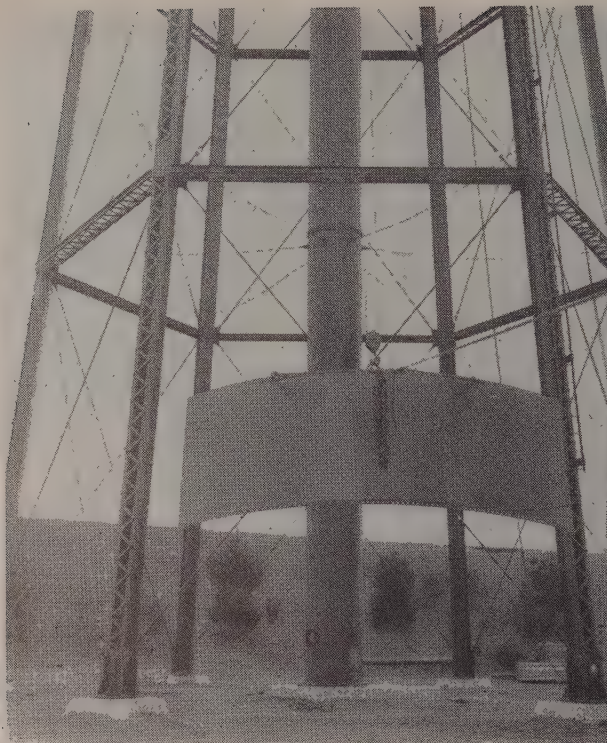
Even though your own cleaning operations

may not require a similar perfection of finish, you will find that Orthosil offers many advantages. It is widely used as a cleaner in heavy industry, for ferrous metals and brass. Being water-free and containing no weak ingredients, it provides outstandingly quick action. Especially effective in electrolytic cleaning because of its high conductivity. Cuts through coatings of grease and oil—prevents dirt from re-depositing—leaves the metal clean and ready for further processing. It is dry, highly concentrated, economical.

Why not let Orthosil start cutting costs for you?

Pennsylvania Salt Manufacturing Co., Widener Bldg., Phila., Pa. — New York • Chicago • St. Louis • Pittsburgh • Tacoma • Wyandotte

PENNSYLVANIA SALT
MANUFACTURING COMPANY
Chemicals



Figs. 2 and 3, above, show erection of 150,000-gallon tank at Mansfield, O., using material treated in the new plant

tions and also with excellent results.

This method of removing mill scale from steel compares favorably in cost with grit or shot blasting and has definite advantages. Pickled surfaces are smooth and clean. There is no film of dust or dirt on the metal. Material is painted immediately, before the surface has a chance to get dirty. The coating of iron phosphate, itself a preservative, forms an excellent bond for paint. The painting of plates while hot not only reduces the drying period but also increases the bond between paint and metal.

Figs. 2 and 3 show such pickled and painted plates being erected to form a 150,000 gallon, ellipsoidal bottom, elevated tank at Mansfield, O. Structure is 76½ feet to bottom and 102 feet to high water line. Plates in roof, shell and riser were put through this pickling process immediately after being fabricated and were painted while yet warm.

Publications Available

■ From Ohio State university, college of engineering, Columbus, O., "Wearing Properties of Some Metals in Clay Plant Operation," being engineering experiment station bulletin No. 97. Price 40 cents.

From University of Wisconsin, engineering experiment station, Madison, Wis., "The Corrosion of

Metals," being engineering experiment station bulletin series 83, price 25 cents.

From national bureau of standards, for sale by superintendent of documents, Washington, D. C., building materials and structures report BMS 8 on "Methods of Investigation of Surface Treatment for Corrosion Protection of Steel," price 10 cents; building materials and structures report BMS 5 on "Structural Properties of Six Masonry Wall Constructions," price 15 cents; and also research paper RP1176 "Elastic Properties of Cast Iron." Price 15 cents.

From bureau of vocational rehabilitation, state department of education, Columbus, O., "Vocational Rehabilitation for Physically Disabled in Ohio."

Summarizes Significance Of Soil-Corrosion Tests

■ "Engineering Significance of National Bureau of Standards Soil-Corrosion Data," is the title of research paper RP1171, prepared by Kirk H. Logan and issued by the national bureau of standards, Washington. This paper, obtainable from the superintendent of documents, Washington, for 5 cents a copy, reports on progress of work in connection with corrosion of various pipe materials.

Approximately 33,000 specimens have been buried by the bureau in representative soils throughout the United States to determine the ef-

fects of soils on pipe in the investigation it was found that the rate of penetration on ferrous metals was not proportional to that on large specimen was greater than that on a small specimen material. Because of the results of tests of small specimens do not show directly what happens on a pipe line.

Results of soil-corrosion should be expressed in three factors. One of these represents the inherent corrosion of the soil or the pit depth area for a unit period of time. Second factor represents time on rate of penetration. Third factor gives the relation from which the maximum depth measured to the depth.

Empirical equations account of these factors suggested, and the constants have been determined for two conditions with respect to 47 sites. This paper presents the equations and the effect of applying them to the estimation of the condition of old, 8-inch line, 1000 feet long a wall thickness of 0.5 inches.

A comparison of the pit depths with field experience has been attempted for a few years. It is shown that although a relation between the data and experience should be expected, the experiences in the same soil differ, the data indicate correlation of the soils tested.



**OFFERING
BIG PRESS DESIGN AND PERFORMANCE
IN THESE SMALLER SIZES**

IMMEDIATE DELIVERY FROM STOCK

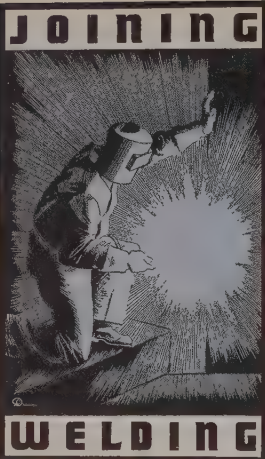
Strong, rigid frames . . . instant engagement 14 point sleeve clutches with built-in single stroke mechanism . . . more strokes per hour with safety . . . long die life assured by slides accurately guided

in adjustable double "V" gibs . . . breech block die clamp . . . convenient, easily operated inclining device,—those are just a few of the "big press" features. Write for Bulletin 58-G showing complete line with capacities from 5 tons up to 190 tons.

**NIAGARA MACHINE &
TOOL WORKS
BUFFALO, N. Y.**

**BRANCHES:
CLEVELAND, DETROIT,
NEW YORK**

NIAGARA



Welded Unit Heater

Fabrication of unit heaters by welding permits improved design features resulting in a better product and also affords manufacturing economies. Due to flexibility of process, wide range in sizes, ratings, mounts are accommodated easily and at minimum cost

By R. J. TENKONOHY

Vice President
Airtherm Mfg. Co.
St. Louis

■ Design and manufacture of unit heaters of the centrifugal fan or blower type require consideration of wide variations in sizes, ratings, operating pressures and mounting methods. These features complicate manufacturing problems, particularly as they affect quantity of parts fabricated at one time.

Variations in sizes and ratings affect casing sizes, the number and size of fans in each unit, drive shaft diameters, motor sizes and supports, and type of fan drive. Airtherm heaters are standardized in seven sizes ranging from 107,000 to 825,000 B.t.u. output per hour. Casing dimensions vary downward from an 89-inch length, 56-inch depth and 40-inch height.

Fans vary in number from one to three in each unit, and motor horsepower from $\frac{3}{4}$ to 3. Drive from motor to fan is direct, through a flexible coupling or through a V-belt.

Operating steam pressures from 2 to 125 pounds are common, while

occasionally higher pressures must be met. This requires special treatment in the heating element or coil.

In use, units are mounted from building floor, side walls or structural columns. To accommodate these user requirements, the unit heaters are made in various standard mountings including an upright assembly for floor mounting, horizontal assembly for ceiling or truss mounting, and inverted assembly for side wall or column mounting. Thus, these units are manufactured in three types, each in seven sizes. Each assembly is an integral unit rather than one of bolted sections.

Trend to Welding

Until about three years ago, casing joints were riveted throughout. Maintenance and replacements of compressed air and punching equipment developed into a sizable item of manufacturing expense. Investigation and experiment indicated a change to welded joints desirable. Corner seams were tried first and stiffening members were stitch welded. This resulted in a more rigid unit, air tightness and better appearance.

Further trials toward eliminating buckled sheets determined the general details of the horizontal Airblanket unit, Fig. 1. Top and bot-

tom of casing on this assembly are made of forced by channels extruded. The sheet sections outward and cover channels, Fig. 2, which well as join the part plug welds at 6-inch through punched hole casing hold the flange channels. Welding inside resulting in a dividing stiffness and ance. This also permits size sheets with little

The Airblanket formed by flanging s top and bottom sheet a long corner weld. mitered joints comp

However, the Airhe 7, is bolted to sides, to permit removal of Rear or air-inlet end a rolled angle for st permit attachment of required. The rolled welded on the inside.

Rigid Fan Support

Support of the fan rigid to prevent war sheets and consequen position of shaft bearing, steel, die former port of flanged triang tion is welded to the carry the bearing as stiffens the sheet as w

Likewise the support bracket for the driving be sufficiently rigid to tor and the attaching ing. Also it must pre to insure proper line struction that accom objectives and reduces

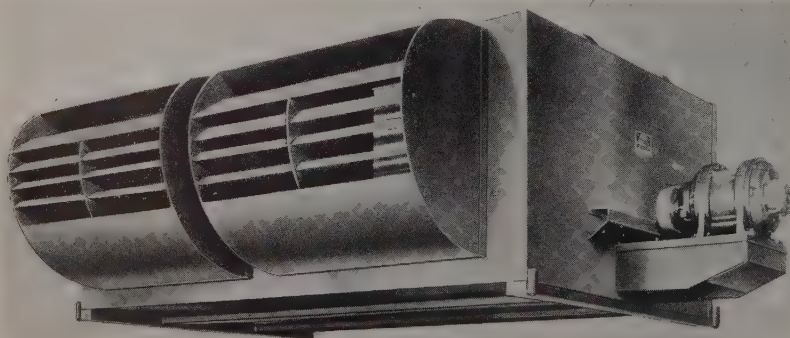


Fig. 1—Airblanket, practically rigid, is here shown as a welded assembly type. Photos courtesy of Welder Corp., St. Louis



I'M STARVED
FOR SOME GOOD,
FAT ORDERS, LAD

WHY NOT COOK
UP NEW DESIGN
IDEAS POP? . . .
TRY THIS RECIPE

Early model and the latest welded-steel model "Good Luck" ranges. Courtesy of Pittsburgh Range & Heater Co., Pittsburgh, Pa.

MLINE FOR SALES WITH WELDED DESIGN



oven recipe for fatten-
volume:

ingredient: One well-
ear of men with a relish
ts down and quality up
le's a **P**rofit **C**rusader.

p the design depart-
e lines of welded steel

"3. Get the shop hot after ways
to produce welded designs at mini-
mum cost.

"4. Add the counsel of Lincoln's
welding engineers and technicians.

"The result is rich in these profit
vitamins: A—Product eye appeal
(witness the streamline welded range
above). B—Production economy

(write Lincoln for examples). C—
Speed of delivery (few operations
in designing and production). D—
Product service economy (through
the rigidity, strength and lightness
of welded steel). Hundreds are par-
taking of this dish for a rosy busi-
ness complexion. Write Lincoln for
a bookful of palatable recipes."

Largest Manufacturers of Arc Welding Equipment in the World

THE LINCOLN ELECTRIC COMPANY

DEPT. Y-607

CLEVELAND, OHIO



FIG. 2

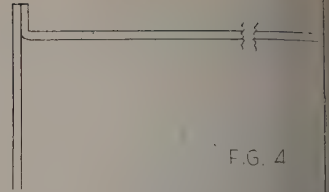


FIG. 4

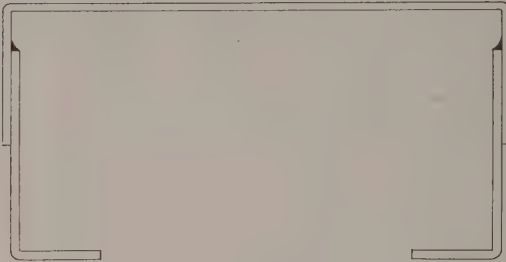


FIG. 3

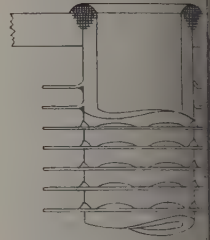


FIG. 5

of motor noises to the casing is most desirable. A portion of this detail is shown, Fig. 3.

Top of bracket is formed of 10-gage mild steel into a pan shape by flanging the edges. This pan then is inverted and the formed ends and sides of bracket are set in and arc welded on the inside, Fig. 3. Then this is arc welded to the side sheet between two inside stiffeners. The bottom is open to allow access to nuts fastening the motor bolts.

Air outlets on the Airheater, Fig. 7, are bolted to the front. One out-

let is used for each fan and set for discharge angle best suited for distribution from the position of unit with respect to floor. Outlet joints are spot welded. Airblanket, Fig. 1, outlets are not necessarily of the same number as fans, since fans are at the rear of the unit.

Outlets on Airblanket units, Fig. 1, are arranged for two streams of air at different temperatures and velocities; the warmer air issues from the lower or louvered section, while lower temperature air leaves the unlouvered section above at a

higher velocity. The fast moving air above the air permits the warmer air to fuse its higher temperature breathing zone before upper part of the blanket.

Each fan is provided with individual housing which is stamped side by side and curved scroll section flanged on the outside and spot welded on the side sheets, Fig. 5. Housing sheets are varied in gage for distribution to prevent vibration at their own weights.

The most difficult welding work is on the heater coils, Fig. 6, which consist of 16 to 32, 1/2-inch pin-formed and finned pipes welded into a closed in a steel casing, steam is supplied and the hairpin pipes are forced or drawn around the pipes and heated.

Pipe Is Re

Super-X quality electric 3/4-inch pipe is used for pin tubes. This is to maintain uniform outside concentricity with maximum of 0.001-inch.

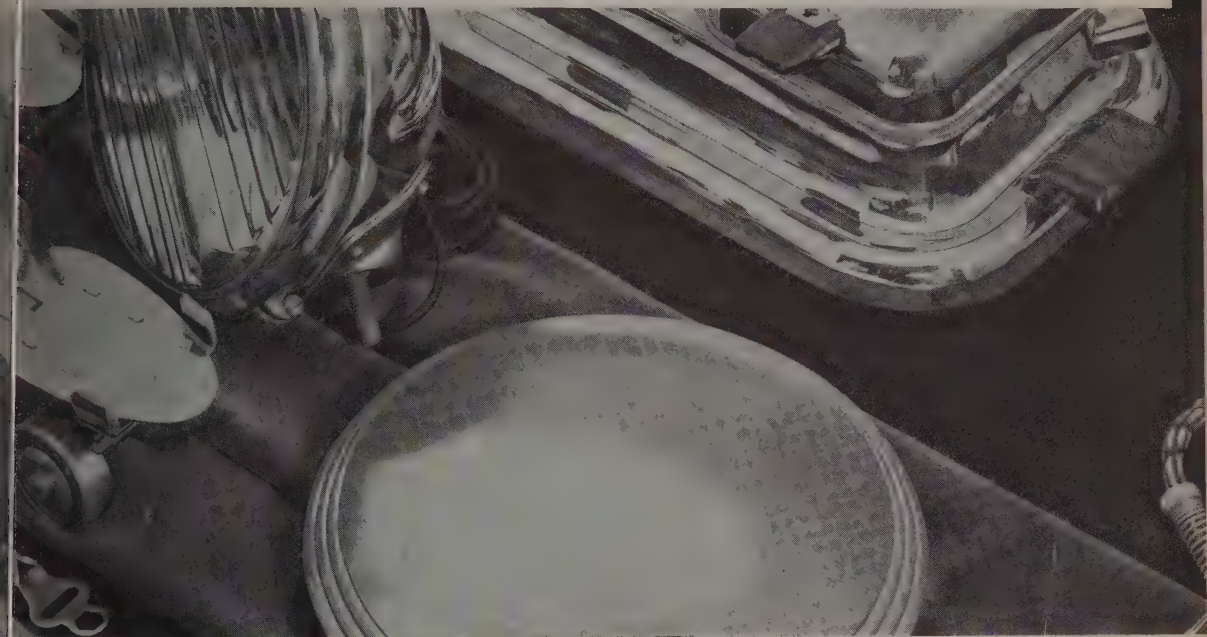
Stamped fins are positioned on the formed 0.017-inch thick, 1/8-inch of bright-finish cold steel. Inside shape is hexagon of smaller the tube so each fin

(Please turn to



Fig. 6—To permit down and header are mounted on a platform on the motor stands as units are feet high

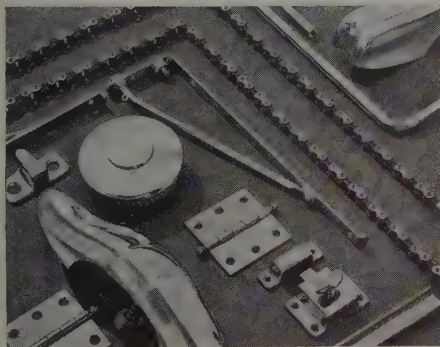
What Material did these Manufacturers use to Trim Costs?



1. HERE ARE A NUMBER of products fabricated from American Quality Cold Rolled Strip Steel. Note the smooth, shining, eye-appealing finish. The variety of products which can be fabricated from our Cold Rolled Strip Steel is without limit.



problems to Ameri-
trip Steel. Here is a
y this product sim-
ms.



3. PARTS THAT ARE LIGHT in weight, attractive in finish and durable can be made at low cost with American Quality Cold Rolled Strip Steel.

MANY manufacturers have discovered that American Quality Cold Rolled Strip Steel fabricates more easily and is doing an outstanding job in many places where more expensive metals were formerly used. Along with ease in fabrication and reduced material costs, this product offers a variety of smart finishes that attract the consumer's eye.

An amazing number of parts can be produced from American Quality Cold Rolled Strip Steel as well. The complete range of edges, tempers, finishes and widths in which this product is available makes it ideal for parts that must be light in weight, accurate in size and attractive in appearance.

Whether you make complete products or parts we can assist you in planning the most economical application of Cold Rolled Strip Steel to your needs. Why not put your problem up to our engineers and metallurgists? Call the man from the American Steel & Wire Company—today.



AMERICAN *Quality*
**COLD ROLLED
STRIP STEEL**

AMERICAN STEEL & WIRE COMPANY

Cleveland, Chicago and New York

Columbia Steel Company, San Francisco, *Pacific Coast Distributors*
United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

New Tin-Plate Mill

With capacity of 100,000 gross tons of tin products yearly, new mill features many advances in layout, operating practice and production equipment. Row of 14 tinning machines down center of building provides for a working space at feed and delivery ends.

■ WHEN THE cold-reduced tin plate mill went into production early this year at the new Irvin works near Pittsburgh, Carnegie-Illinois Steel Corp. rounded out its production facilities in Pittsburgh area. Ground was first broken for the Irvin works in May, 1937. Nine months later, the new tin mill was working hot-rolled strip shipped in from McDonald 43-inch hot strip mill at Youngstown, O. New tin plate mill, designed for production of 100,000 gross tons of tin mill products per year, represents latest advances in layout, operating practice and production equipment.

Hot-rolled coiled strip up to 38 inches wide comes to tin mill pickling line from raw coil storage. Coiled strip to be cold reduced for tin plate goes to a downtilter, discharging coil to a short trough

STEEL has carried other technical descriptions of the Irvin works as follows: Continuous 80-inch hot mill, Jan. 16, p 56; truck-battery charging setup, Jan. 30, p 62; coil conveyors, Feb. 13, p 69; piping, Feb. 27, p 36; cold mill, April 10, p 56

conveyor for delivery to a processing uncoiler which prepares the surface for pickling, on to an upcut shear and on to the stitcher at 400 feet per minute.

After passing through a wet loop-er pit, pinch rolls advance strip through a series of four acid tanks to cold rinse tank, hot rinse tank and dryer. Here other pinch rolls

move strip through pit to another upstitched portion in pits at both ends permit continuous strip through tanks are being made at out at the other. A available at discharging machine preceded which in turn discharges roll-trough conveyor to coil storage. pickled coils from conveyor to storage. Speed of 38-inch coil line is from 60 minute.

Strip for convers. black plate may be in either a 5-stand 20½ and 53 x 42-4-high, 20½ and 53 x ing mill, the 5-stand carrying the bulk. This mill delivers coils at from 600 to 1650

Uses Belt W

No. 1 stand is driven by a 1-horsepower motor and is geared to 1050 revolution per minute. The other stands are powered by 1-horsepower motors operating at 790 revolutions per minute. They receive direct current from a 120-volt, variable-voltage control unit. The 20 x 42-inch, collar-type tension reel is made of heavy, sturdy, 6000-psi aluminum. It is driven by a 1-horsepower, 600-volt motor operating at 300 to 1350 revolutions per minute. A belt wrapper permits the reel to be set in a separate power to the 5-stand.

Material 16 to 38 i
14 to 16 gage is tak
pickling lines and

Delivery end of 42-inch,
cold-reduction mill at :

a **NEW** and **BETTER** slushing compound—

GULF OILCOAT NO. 1

*Easily applied — long lasting —
protects highly finished metal
surfaces.*

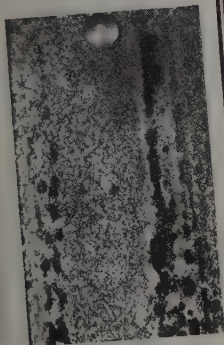
THERE is now available to you an improved material to protect highly finished surfaces of steel and non-ferrous metal products against corrosion — GULF OILCOAT NO. 1. This product is an entirely new type of slushing compound, developed by Gulf technologists after many years of research and field tests.

While GULF OILCOAT NO. 1 provides a thin film which is not easily rubbed off by handling, it may be readily removed by conventional solvents. Accelerated laboratory corrosion tests, as well as field tests with all types of metals, have established the superiority of this new type of slushing material over products formerly used for this purpose.

GULF OILCOAT NO. 1 can be applied by any conventional method and lasts for a long period of time. It is nominally priced and economical to use. Ask the Gulf representative who calls on you to give you further details — or fill in and mail the coupon below for complete information.

Exhaustive accelerated corrosion tests have been conducted in the Gulf laboratory to determine the effectiveness of GULF OILCOAT NO. 1 as compared with ordinary slushing compounds. The metal samples at the left tell the story.

Here's Proof!



Two similar pieces of metal, one with GULF OILCOAT NO. 1 and one with a conventional slushing compound, were exposed to highly corrosive acids for the same length of time. The difference in value of GULF OILCOAT NO. 1 is clearly demonstrated by the perfect condition of the metal plate on the left.

GULF INDUSTRIAL
LUBRICATION
CUT AND MAIL THIS COUPON

Gulf Oil Corporation—Gulf Refining Company,
Room 3813, Gulf Building, Pittsburgh, Pa.

Please send me complete information and price quotations on GULF OILCOAT NO. 1.

Name.....

Company.....

Address.....

S.



General view of huge
ing room

plate gages in 6000 to 12,000 pound coils. Coiler has a 20-inch core and will handle coils up to 54 inches outside diameter. Mechanical tension control equipment is installed between all stands and each stand has a strain gage with indicator at eye level. All adjustments are made from the floor. Special systems supply strip and roll coolant. Provision has been made for fog elimination. Flying micrometers keep close check on strip thickness.

Three electrolytic cleaning lines handle 16 to 38-inch wide strip at speeds from 500 to 800 feet per minute. Cold-reduced coils for tin plate are brought to these lines by tractors. Placed in cone-type uncoilers, strip feeds to a welder where seam is made close to leading edge of following strip, which is placed above the loading strip so any loose flap will not impede progress through roll passes.

Strip then moves through hot washer and wringer rolls into the single compartment electrolytic tank which has a single, large, floating type, submerging roll at each end to bring strip to proper pass line. Strip, functioning as the cathode, passes between several sections of specially designed large-surface anodes. Covered support rolls plus line tension maintain strip at proper pass line to assure equal cleaning on both sides.

From here, strip moves to a scrubbing unit, hot water rinse and rubber-covered pinch rolls. After looping to eliminate tension, strip is recoiled. Motors in electrolytic cleaning lines are operated from two 75-kilowatt and one 100-kilowatt motor-generator sets. Adjustable load-

current relays in the reel motor armature circuits control strip tension, and adjustable field rheostats in the tension drag-motor circuits set the line speeds. Tension drag unit feeds current back to motor-generator set. Main control stations are near delivery end of each line, with an auxiliary station at the seam welder. Current for cleaning is furnished by motor-generator sets,

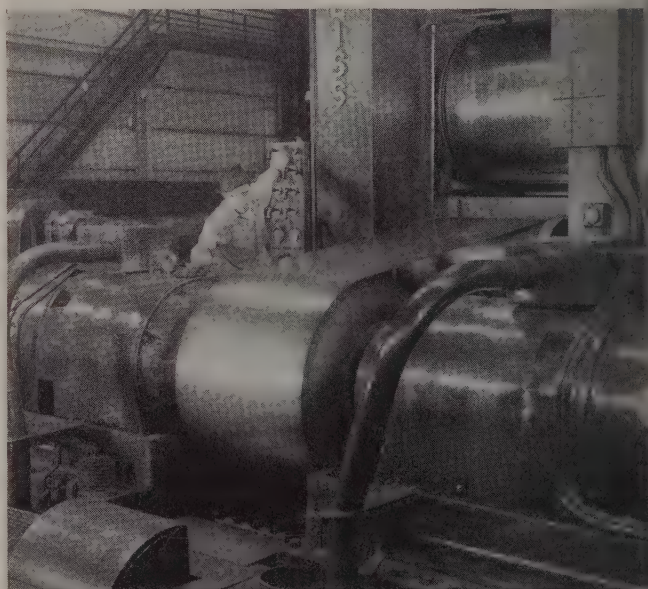
each supplying 7500 volts. Two sets are each cleaning line.

Cleaned strip advances to mill annealing department. 36 bases and 11 heaters are available. Each base has 8 coils up to 54 inches in diameter. As strip for tinning is never over 32 inches wide, coils are usually stored on the bases, giving 36 coils per base. Each base is equipped with a hood to permit atmosphere annealing. Permanent bases for each line permit one to be loaded while another is being heated and one cooled.

Annealed stock is then sent to temper mill department. 4-high, 18 and 42½ inch mills are available. One 4-high mill is capable of operating at 1500 feet per minute. Two 2-stand tandem mills operate at 600 to 1200 feet per minute. Uncoilers, motor-driven rolls and recoilers are used to strip from 16 to 38 inches wide.

Temper passed strip

(Please turn to



Upper, entry end of 42-inch, single stand, tin temper mill. Lower, delivery end of one of five 75-inch tinning machines

Meble Iron

1. Holding Iron

ph, metallurgist, Sag-
le Iron division, Gen-
Corp., Saginaw, Mich.,
at Mr. Klein said little
properties of malleable

Excess Metal Snuffed Off

Dr. Enrique Touceda, consulting

PRESENTED on this and succeeding pages are reports of various technical sessions held during the forty-third annual convention of the American Foundrymen's association in Cincinnati, May 15-18. Additional reports will appear in STEEL next week

How To Apply Atmosphere

Deere & Co., Moline, Ill., stated his experience indicated that advantages can be derived from atmosphere control and that gas composition can vary over a fairly wide range. E. G. deCoriolis, research director, Surface Combustion Corp., Toledo, O., substantiated the statement that the atmosphere itself is not of tremendous importance; first essential is that it be nonscaling.

Mr. Joseph volunteered that a furnace in his plant utilizes 2800 cubic feet of gas for an anneal of which 400 feet is used in generating the atmosphere. He felt, however, that the nature of the atmosphere is important, perhaps on account of water vapor content. More trouble is experienced with the atmosphere in summer when the air is moist than in winter when it is dry. Dr. Schwartz pointed out that decarburization may be caused by something other than oxidation. No one was able to explain why more uniform annealing was obtained beneath a machined surface, as Mr. Dow indicated.

A method for determination of hydrogen in solid white cast iron by direct combustion in oxygen was described by Dr. Schwartz in his paper. It was shown that hydrogen content may range from about 0.0002 to 0.0015 per cent and that melting under hydrogen or the presence of rust in the charge increases hydrogen content and that hydrogen escapes rather rapidly from iron at 1475 degrees Fahr. Atomic hydrogen deposited electrolytically on the surface of white iron is absorbed and raises the hydrogen content to about that absorbed by molten iron from hydrogen gas. This hydrogen is promptly expelled on heating. Dr. Schwartz made no attempt to study effect of hydrogen on any property of the solvent iron.

Prof. Ash presented his brief paper on nitrogen in malleable simply for the sake of useful information it might contain; he made no effort to deduce conclusions.

Intimate problems and current practices were discussed at the malleable roundtable dinner. A considerable portion of the time was devoted to discussion of synthetic molding sands and humidity control of blast for cupolas.

Castability

■ Many theories relating to castability of metals, particularly iron, steel, aluminum and malleable iron, were aired at one session. Since fluidity or flowability of all metals present the same basic features, the four papers bore a relationship in that each stressed temperature as the most important factor. However, in each paper special modifying fac-

tors were described to show that high temperature of the molten metal does not offer a complete answer.

A paper by C. H. Lorig and E. C. Kron, Battelle Memorial institute, Columbus, O., detailed a series of experiments designed to determine factors responsible for free or sluggish flowing steel. Results seemed to indicate that temperature is the most important factor, with composition of the steel also in the running. In discussion, the point was raised that recarburizers and other ladle additions appear to affect castability.

Second paper, "Effect of Superheating on Castability and Physical Properties of Cast Irons of Different Carbon Contents," by N. A. Ziegler and H. W. Northrup, Crane Co., Chicago, described an interesting series of experiments in which commercial gray irons were melted in a high-frequency induction furnace and cast into spiral castability molds and standard test bar molds. The metal was superheated, then cooled to various temperatures. Carbon content was reduced from 3.00 per cent to 2.50 and then to 2.25 per cent.

Higher Carbon Is Beneficial

Results indicated that castability is increased by increasing carbon content, pouring temperature and temperature of superheat. Transverse bend strength, brinell hardness, tensile strength and proportional limit are increased by decreasing carbon. Higher pouring temperature increases these properties particularly with irons of lower carbon content. Superheating tends to eliminate free ferrite, refine and localize graphitic flake and break up dendritic formations. Most advantageous pouring temperature was found to be 2800 degrees Fahr.

A series of experiments on measurement of fluidity of aluminum casting alloys was described in a paper by L. W. Kempf and L. W. Eastwood, Aluminum Co. of America, Cleveland. Mr. Kempf pointed out that since fluidity of the alloy becomes important where thin sections are poured, a fluidity test should simulate these conditions. Instead of the usual spiral type of test, the surface area per unit of volume should be large. The results obtained from the usual fluidity test spiral with round cross section, a minimum surface per unit of volume were compared with a new type of flat spiral having a cross section $1\frac{1}{4}$ inches wide and $1/16$ -inch thick. The two types of spirals produce quite different results. The flat spiral more nearly represents foundry conditions. Effect of tin and silicon on the fluidity of aluminum containing 3.75 per

cent magnesium and iron on the fluidity of metal also has been discussed through the flat spiral.

Prof. E. J. Ash, Michigan, Ann Arbor, presented a progress report of malleable iron.

Refractories

■ Two papers and a discussion presented at one session provided much information which should prove in refractory material and refractory equipment. Mr. E. metallurgist, John Co., Waterloo, Iowa, paper on "Plasticity of Refractories," and A. V. Leung, engineer, Bethlehem Steel Co., Bethlehem, Pa., the other papers discussed the properties of Refractories Used in the Steel Industry.

Mr. Wilke's paper on a new method used successfully by the plant with view to associated for patching zone of cupolas. A fireclay, sharp sand and brick in place of the brick or block, economies in both refrac-

After slag and cooling out, the patching material by hand, starting at the working upward. the cupola is patched out to use to allow it properly. A white Illinois and an Illinois fired ing a high fusion material. Sand is applied mesh and fireclay. Some type of pug is mended for mixing, not giving satisfactory

After the mud has it may be used at said, as no benefit is lowing it to set. It is up to a thickness of adheres best when the face is rough. If the hot, it must be cooled spray.

One ton of the patch having a ratio of 60 and 40 parts of clay mixing costs about completely patched with 2500 to 3000 pounds to \$6. It was revealed er that a complete sand and fireclay for all block, brick, etc. patching and relining period during which of iron were melted. fractory cost of \$12.7 of melt.

Time required for cupola for the next

follows: Chip out man—20 to 40 min—melting zone—2 men nud well and fill 20 minutes; and 1 man—30 min—

question, Mr. Wilke charge contained 10 scrap and that the carbon of 3.25 per discussion centered it is more economical in a pug mill. The author had had with the latter, but stated that the muller

dealing with refractory steel foundry, Mr. in the design and a furnace the main cost per ton of is directly dependent from the furnace campaign since the pre. To obtain the maximum proper choice of the refractories. It is shown that certain furnaces have more severe other sections. In it is good economy factory capable of giving life, cost of the re-secondary.

Refractories specifically and electric furnaces for lining, bung type and the furnaces for another strain relieving, and Discussion, although confined to direct answers.

Is Handling

associated with material selection and use equipment proved an incorrect for one session. provided two papers—ment for the Miscellaneous Foundry," by W. foundry superintendent, factor Co., Waterloo, The Tests on Effectiveness Blast Under High Cleaning Castings," by ber, Hydro-Blast Corp.,

holding equipment in value of sand control, maintenance, sand sling-jolt squeeze units in Jennings cautioned equipping as against plug in setting up a modern production problem today is to cheap, accurate, and engineering quality," answer is equipment accurate castings could

be made with highly skilled workmen where molding price is not the deciding factor. However, to maintain the American standard of high wages, better quality, and lower price, we must produce in quantity.

"There are perhaps a dozen large foundries which are completely mechanized and a hundred or more partially so. Due to changing economic conditions, it becomes almost imperative that our foundries are equipped better — improved from every point of view—working and atmospheric conditions, washroom, toilet and production facilities with less lost time. The foundry is becoming a manufacturing unit which operates on an 8-hour schedule," Mr. Jennings continued.

"A molding unit may cost from \$5000 to \$10,000 per molder. The interest and depreciation on a \$10,000 investment are equivalent to a man on the payroll. This man may have no clock number, but he stands at your elbow every day, 5 days per week, 52 weeks per year. Be sure you keep him busy. For the average shop the unit should be designed to be profitable at below normal requirement, and have flexibility enough to operate 24 hours per day in high production periods."

Must Turn Out Molds

A point emphasized repeatedly by Mr. Jennings was that the important job in the foundry is "to get sand into the molds and get the molds away from the molders." Illustrating how this is accomplished in his own foundry, he described various methods and equipment which expedite flow and eliminate hold-ups.

Summarizing tests made on the effectiveness of high-pressure water blast for cleaning castings, Mr. Webster stated that: Sand entrained in high velocity water has an appreciable abrasion action on metal; effectiveness does not change significantly up to 36 inches, but that the stream becomes less concentrated at a distance; and pure water alone, even at 1200 pounds, has no significant effect.

In the water-blast method water at a pressure of 1200 pounds per square inch is discharged by a hand gun having a replaceable 0.190-inch orifice at a speed of 18,000 feet per minute. This high speed is necessary to give proper velocity to the sand. The ratio of water to sand by weight is 3 to 1, or 28 gallons of water to 60 to 70 pounds of sand. The sand, which is wet, is sucked into the gun and not fed by gravity—the latter procedure would cause plugging.

For average cleaning work, a mixture of coarse-grain and fine-grain sand is satisfactory, asserted Mr. Webster. Coarse grain is most suit-

able for removing heavy, brittle scale; and fine grain for lighter, tight scale which is to be removed without pitting.

Castings can be made to dry bright by adding to the water potassium bichromate in the proportion of 1 pound to 8000 gallons. This is only a temporary rust inhibitor. It is understood that castings which are so treated and which are to be galvanized must be washed in a dilute solution of muriatic acid to remove effect of the potassium bichromate. Application of enamel, however, is understood to be unaffected by the solution.

Safety and Hygiene

■ A detailed review of his experiences in establishing a safety and hygiene program in a small foundry was contributed by P. E. Rentschler, Hamilton Foundry & Machine Co., Hamilton, O., at the safety and hygiene session. The speaker pointed out that a definite effort had been made in his plant to maintain a close personal contact with workmen, and that the first development was from the health point of view. The safety phase then followed.

He said the result of the program was an interest in personal health, interest in health lectures which were arranged by the company, safety consciousness was developed, and improved plant maintenance was provided at little expense. Mr. Rentschler said that the development of the safety and hygiene program logically led to the arrangement of an open house to which employees families were invited. In his opinion, the program is paying large dividends.

W. H. Doerfner, Saginaw Malleable division, General Motors Corp., Saginaw, Mich., related how his firm held an open house which was attended by more than 5000 people of Saginaw. The undertaking was studied carefully before it was carried out, and arranged from a public relations viewpoint. He stated that it should be remembered that people generally are interested in how products are made. He suggested starting a plant visitation by inviting local dignitaries such as city officials, etc. To make it worthwhile a definite product should be featured, and all phases of its manufacture explained in detail. As a final touch, visitors should be given a souvenir of some kind, because this creates a lasting impression.

Both Mr. Rentschler and Mr. Doerfner stressed taking of numerous photographs which later are displayed on bulletin boards, and also given to individuals appearing in them. Officials should also be present to greet the visitors.

British Steel Institute

Research Work Presented

■ TWO VALUABLE reports, one on heterogeneity of steel ingots, the other on alloy steels, featured the seventieth annual meeting of British Iron and Steel Institute in London May 3-5. Some 14 papers and a number of other reports featured the meetings.

For the second year in succession, the Right Hon. Earl of Dudley, chairman of Round Oak Steel Works, Ltd., took the chair. In opening he expressed appreciation of the institute for the great pains taken by their American colleagues in organizing the meeting that was to have taken place in New York in September, 1938, but which was cancelled on account of the international political situation.

Report of the council showed that on Dec. 31, 1938, institute members numbered 2630. Autumn meeting of the Institute will be held at Cardiff, Sept. 12 to 16.

Gold Medal Award

The Bessemer gold medal was awarded to James Henderson, vice-chairman Appleby-Frodingham Steel Co., Ltd., Scunthorpe, Lincolnshire, and director of United Steel Companies, Ltd.

Two Carnegie gold medal awards were made, one to Dr. Ing. Wolfram Ruff, Reinsherd, Germany, for his paper on "Running Quality of Liquid Malleable Iron and Steel," the other award to Dr. James White for his paper on "Equilibrium at High Temperatures in Systems Containing Iron Oxides."

The Williams prize was awarded to D. V. Krishna Rao for his paper on "The New Steel Plant of the Mysore Iron and Steel Works, Bhadravati, India." H. Ehscher also received a prize for his paper on "Ten Years' Development in Steam Engineering at the Port Kembla Steel Works, New South Wales, Australia." This prize was offered by Capt. C. A. Ablett, managing director, Cooper Roller Bearings Co., Ltd. In subsequent discussion of this paper, Capt. Ablett emphasized the increase in boiler efficiency at Port Kembla, which rose from 59 per cent to the present 80 per cent. When constructing the boilers, allowance was made for future installation of blast furnace gas heaters which would raise the efficiency to 87 per cent. This latter figure was said to be the efficiency obtained at the Battersea power plant in London, claimed the most efficient in the world.

In the "Eighth Report on the

Heterogeneity of Steel Ingots" by Dr. W. H. Hatfield, director of research at Brown-Firth Research Laboratories, Sheffield, it was pointed out that during recent years it has become increasingly apparent that there is a limit to results achieved by control of casting conditions and mold design alone. Ultimate progress of a fundamental character is intimately bound up with careful study of the actions proceeding within the steel itself. With this object in mind, a program of work was laid out, results of which were presented in this report. As a result of work done in connection with this program, it was stated that now twin problems of oxygen determination and liquid steel temperature measurement by the Schofield "quick-immersion" thermocouple are sufficiently understood so these two factors no longer impede a quantitative study of steel-making conditions from a physico-chemical standpoint.

In discussion that followed presentation of the second report of the Oxygen Subcommittee, it was pointed out that as a result of work accomplished by this committee, it is now possible to obtain a much greater control of oxygen in steel ingots. Following a description of Schofield method of measuring temperature of liquid steel, several comments were made that very consistent results had been obtained by use of this method.

In a paper on "Influence of Fluorspar in the Basic Open-Hearth Practice," by W. B. Lawrie, Workington, Cumberland, it was pointed out that the influence of fluorspar is probably indirect, the fluorspar giving greater fluidity to the slag, enabling it to carry additional lime.

Strain-Age-Hardening

In "A Study of 'Strain-Age-Hardening' of Mild Steel" by Dr. C. A. Edwards, H. N. Jones and B. Walters of the University College of Swansea dealing with the influence of cold work produced by tensile strains followed by ageing at 250 degrees Cent., particular consideration was given to effects of small amounts of cold work, such as normally produced at yield stress of normalized materials and subsequent ageing upon the newly acquired yield point. Under these conditions it was found that yield point after age hardening was proportional to yield point of the material in original condition. While true for mild steels of widely differing chemical compositions, the

presence of comparatively small percentage of carbon was not a cause of departure from the rule since it diminished the amount of ferrite present in the steel. Evidence indicated that there was no effect when the steel was strained under pure tension and aged at temperatures up to 300 degrees Cent.

Another paper by Dr. D. A. and H. A. Wainwright of Sheffield discussed the effect of strain ageing on tensile strength and hardness properties of mild steel. It was found that the effect of ageing upon hardness was a simple increase. Tensile strength did not follow the same law. There appeared to be a mental difference between hardness and elongation, these properties exhibiting the degree of the intermetallic relationship associated with them. No effect appeared to increase the rate of hardening and also produce a more erratic material than

Spectrochemical Analysis

F. G. Barker, Sheffield, gave a communication from the Spectrographical Section of the Ordnance Inspection Department, Sheffield, on "Some Applications of the Spectrograph to the Qualitative Analysis of Ferrous Metals." The description of a model spectrograph and a comparison of work done in the Admiralty, Sheffield, in the development of spectrographic methods for the quantitative analysis of steel and non-ferrous alloys. Experiment tend the scope of spectrographic methods showed it was possible to make quantitative analysis of several elements with accuracy closely approachable by chemical methods. The technique adopted was described and effect of various standard conditions was discussed.

Dr. L. Northcott, of the Department, Woolwich, discussed development work in connection with the Durville process. Structure and properties of small steel ingots cast in the Durville normal casting method were compared with those of normal casting method. It was shown that principal advantage of the Durville method was the ability to cast at low superheat to insure a fine crystal structure and equi-axial, thus reducing segregation and ingotification. It was noted an improvement in surface quality and mechanical properties. Most likely application of the process appeared to be for smaller ingots where high-quality or tool steel was required to avoid freedom from segregation.

are a requisite. That followed, it was the method of pour-
 uence ingot quality, paper. One speaker experience with the
 g aluminum bronze case, the ingots ob-
 bably cleaner than cess, he said. It was
 ever, that certain had been made by
 at a lower position is of the ingot. This
 e mold more quick- developments in the
 uded the former mal- lation and produc-
 od, it was stated.

of the rolling mill
 ingham Steel Co.,
 by W. T. Wilson,
 colnshire, in another

ssure, temperature,
 and soaking on coke
 discussed in a paper
 den, W. Noble and
 of Newcastle-upon-
 obtained indicated re-
 ssures, up to about
 square inch, applied
 ization may bring
 en strengths of cokes
 weakly coking coals.
 es in pressures up
 er square inch have
 fect upon the coke

th Temperatures

of coke strength dur-
 ion was found to
 distinct temperature
 st was from 400 to
 ent., corresponding
 range. It is in this
 coke is affected by
 second temperature
 650 degrees Cent.
 strength developed
 maximum tempera-
 turing carbonization.
 ate of carbonization
 aking brought about
 erences in strength.
 at discussion, it was
 at using pressure on
 rbonization did not
 al, and suggestions
 compressing the coal
 rbonizing operation.
 e of increasing the
 sh coking coals, al-
 scarce in certain
 emphasized. Possibil-
 ing the internal pres-
 coals to obtain good
 ven from coal of a
 as suggested.

Report on Refractory
 presented by Dr. T.
 was based on work
 efractories Research
 some 475 pages,
 committees was re-

its were brought out

during discussion of this report. It was mentioned that chromium brick had been strengthened by addition of about 10 per cent carbon with excellent results in a number of tests. Relatively poor chromium ore in the Shetlands has been used to good effect and given good bricks. Comment was made that chrome-magnesite bricks in open-hearth furnaces had been used with success. Another commentator pointed to the great improvement in silica bricks in recent years. Recent develop-ments in mineralizing bricks by iron oxide have been encouraging.

"Second Report of the Alloy Steels Research Committee" gave

results of researches being con-ducted at the National Physical Laboratory and elsewhere. The dele-terious effect of sulfur dioxide was emphasized in the discussion. One commentator said it was quite possible to obtain complete control of furnace atmosphere. He said that research for which the committee is responsible has already had the practical conclusion of enabling steelmakers to foresee what will be the composition of the atmosphere of the furnace from the standpoint of sulfur and oxygen.

Other papers presented at the meeting were: "Nickel-Iron-Alumi-
 (Please turn to Page 79)



"GIVE A LIFT?"

CERTAINLY!

**... by handling all your loads with Elwell-Parkers:
 Destroy Waste—Stop Losses—Step Up Profits**

Certainly! When this Elwell-Parker stops tiering bags for a big Western chemical company, *the warehouse will be tight-full. That's certainly "giving a lift" to your loads with a vengeance—and to your profits, too:*

Because, with Elwell-Parkers you replace slow, costly methods with fast, efficient ones; hustle big loads instead of dragging them; keep aisles clear and

warehouses chock-full; supplant hazard with safety every moment of operation.

Certainly! Elwell-Parker, with 33 years' outstanding engineering experience, brings you not only modern improvements but modern ideas for big money-savings. Write or *Wire Collect* today.

The Elwell-Parker Electric Company,
 4501 St. Clair Ave., Cleveland, Ohio.

ELWELL-PARKER *Power Industrial* **TRUCKS**

ESTABLISHED 1894 • BUILDING POWER INDUSTRIAL TRUCKS SINCE 1906

NEW METAL PRODUCTS

■ A dispenser for rolls of corrugated paper used in shipping departments is announced by E. O. Bulman Mfg. Co., Grand Rapids, Mich. Dispenser accommodates a roll 30 inches in diameter and 36 inches long. Cutter travels on a horizontal plane always in same position relative to roll. Paper is drawn from bottom of roll, fed up over a 3-inch diameter steel roller



and underneath a cutting blade which has separate frame for giving necessary tension. Dispenser delivers paper with corrugated side up and has a tendency to iron out paper. Locking device holds knife from frame, when roll is replaced.

■ Double pedestal drop head type-writer steel desk has been announced by Globe-Wernicke Co., Cincinnati. Stabilizing device eliminates vibration of typewriter bed which is drilled to accommodate all standard makes of typewriters. Top surface has heavy battleship lino-

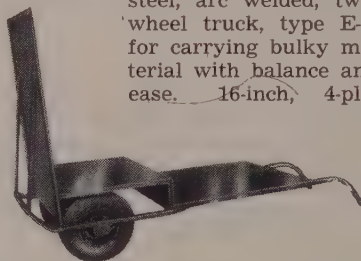


leum with bronze binding strip. Desk is supplied in medium dark-green and walnut or mahogany.

■ American Chain & Cable Co. Inc., Bridgeport, Conn., offers Endurweld sling chains with fittings of same material made by process in which temperature of weld and pressure of electrodes are automatically controlled. Weld is at end of link and

is thus protected from damage. Endurweld No. 55 has tensile strength of 55,000 pounds, No. 85 of 85,000 pounds and No. 125 of 125,000 pounds. All have special heat treatment after welding. For corrosion resistance stainless steel, monel metal or Everdur bronze is used.

■ Chicago Mfg. & Distributing Co., 1928 West Forty-sixth street, Chicago, has developed a 12-gage sheet steel, arc welded, two-wheel truck, type E-4, for carrying bulky material with balance and ease. 16-inch, 4-ply,



pneumatic tires with tubes on ball-bearing disk wheels are used. Truck is 3 feet wide, 3 feet high and weighs 215 pounds. Loading surface is 15 feet square.

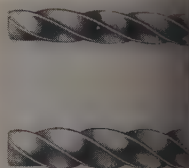
■ A convenience for scaling fish, plucking fowl or skinning game known as Jiffy fish scaler has been developed by Patent Products, Inc.,



Milwaukee, Wis. Holder can be mounted anywhere in either horizontal or vertical position and is free to revolve. Holder and plate are hot-tinned, clamp is cadmium-plated and scaler is nickel-plated. Scaler may be used as decapper.

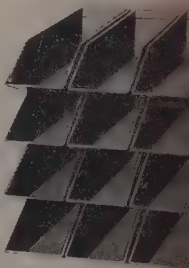
■ A spiraled dowel employing principle of opposed screw action has been developed by Pittsburgh Screw & Bolt Corp., Pittsburgh, to overcome the problem of railroad ties splitting after being installed in track. Dowels are made from bars of mild copper-bearing steel, twisted into a spiral. Driving ends are cut square, entering ends bluntly tapered. Dowels are put in prebored holes by driving with a sledge. Deep spiral thread has sufficiently long lead to permit rotation of dowel under driving pressure. When driven into tie its full length tie cannot

move away from s
because of double lo



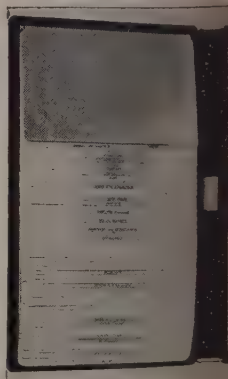
duced by spiral th
tie, dowel cannot r

■ A uniform stacking to keep parts within and which can be used on bench has been developed by bin Corp., Providence. It can be set up in stacked one above t



ing bottoms keep front. Bins are 8 inches deep, 4 inches and 3 inches wide in

■ After making a visible record forms Records Inc., 8 South Avenue, Chicago, finds record keeping forms under 34 classifications total of 101 forms with tensiveness and effectiveness most universally adopted includes accident, budget, cost, credit, employee, equipment, installation, insurance, ledger, prospect, sales, service stock, File has metal tabs



Have You Seen This HELPFUL LITERATURE?

Here are the latest industrial publications reviewed for your benefit. They are yours for the asking. There is no charge or obligation. Simply fill in the convenient coupon and return.

Lucifer Engineering Co.—24 page illustrated bulletin. Complete descriptions of the chemical gas producer are given. Capacity data, capacities and typical installations are included. Coal and gas are shown.

Machine Corp.—12 page illustrated bulletin on large scale welding of unusual and heavy fabricated parts is included. Service recently made in industry in general is explained, heat treating and other services are shown and described.

Co.—38 page illustrated catalog on performance of lathes. The full range of heavy duty and special lathes are described and given. Set-ups and applications of numerous jobs are illustrated.

Steel Castings Foundry Co.—4 page illustrated bulletin. Stainless steel castings are fully described. Smith alloys are described. Chemical control laboratory and its importance in production are outlined.

(5)—Welding Timer

The Electric Controller & Mfg. Co.—4 page illustrated bulletin No. 1201. The new "Neutron" weld timer for spot, butt and projection welding, a recent development, is presented. Available in two types, one with timing range from 1/200 to 1 second and the other from 1/60 to 2 seconds. Accurate control of weld timing is assured by using this new unit.

(6)—Pickling Equipment

Bronze Die Casting Co.—4 page illustrated bulletin "Bring Your Pickling Tanks Up-To-Date." A new drain outlet and a new steam jet for pickling tank applications are described. The "B. D. Metal" from which they are made is especially alloyed to withstand acid fumes and increase their life.

(7)—Crane Equipment

Harnischfeger Corp.—30 page illustrated bulletin No. C-5. "Electrical Equipment for Cranes" includes discussions of all types of electrical equipment necessary for modern overhead crane operation. Various types of motors, brakes, controllers and other crane equipment are fully covered.

(8)—Fire Extinguishers

Walter Kidde & Co.—4 page illustrated bulletin No. Y-498. Lux carbon dioxide portable fire extinguishers for use against flammable, electrical and chemical fires are described. New developments in this type of extinguishers are announced and fully covered.

(9)—Metal Spinning

Milwaukee Metal Spinning Co.—4 page illustrated bulletin "Skill will do it," which describes how metal spinning provides low cost scale models and experimental work. Shop drawings show typical metal spinnings in numerous forms. This method of metal forming is especially suited to short run production where dies would be prohibitive.

(10)—Single Crank Presses

The Minster Machine Co.—24 page illustrated bulletin No. 4038. Series "40" straight side single crank presses are pictured and described. Advantages of this type of press, full dimensional information and capacities are given. Engineering tables are included.

(11)—Geared Head Motors

Barber-Colman Co.—4 page illustrated bulletin No. F-1439. Design and construction of "Barcol" geared head motors, dimensional tables, performance characteristics, wiring diagrams, and full specifications are included in this engineering bulletin. Several types are discussed.

(12)—Lead Bearing Steels

Joseph T. Ryerson & Son, Inc.—Bulletin on lead bearing steels. Describes new open-hearth steels which improve machinability from 20 to 40 per cent, and increase tool life. A wide range of analyses are available. Results of actual machining tests are given.

Dept.
St.
to

KKL
5-22-39

Literature I have circled below.

| | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|
| 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | | |

Title

State

This card must be completely filled out.

FIRST CLASS
PERMIT No. 36
(Sec. 310 P.L. & R.)
Cleveland, Ohio

BUSINESS REPLY CARD

No Postage Stamp Necessary if Mailed in the United States

2c POSTAGE WILL BE PAID BY—

STEEL

Penton Building
CLEVELAND, OHIO

Readers' Service Dept.

HELPFUL LITERATURE

(13)—Diamond Wheels

Norton Company—8-page illustrated folder. New metal bonded and "Resaloy" diamond wheels designed for hard usage are described. These wheels are particularly adapted to cutting cemented carbides and in cup wheels for resharpening cemented carbide tipped tools, and for cemented carbide production grinding.

(14)—Atmosphere Control

The Brown Instrument Co.—6 page illustrated bulletin No. 90-3. The "Analy-graph" for determining the correctness of furnace atmospheres in order to eliminate scaling, decarburization and other harmful attacks on metals, is announced and fully described. Has wide application in heat treating of metals.

(15)—Variable Pitch Sheave

Allis-Chalmers Mfg. Co.—16 page illustrated bulletin No. 1261-B. "Variable Pitch Texrope" sheaves in both stationary control type for occasional changes of speed and the motion control type for use where frequent speed changes are necessary are described. Dimension sheets and installation photos are given.

(16)—Inclinable Presses

Niagara Machine and Tool Works—40 page illustrated bulletin No. 58-G. Inclinable open back presses in a wide range of sizes for cutting, drawing, forming, perforating and bending are presented. Two complete lines of presses are shown. Design details, structural features and specifications are given.

(17)—Metal Coater

The Watson-Standard Co.—4 page illustrated bulletin on Protexsteel metal coater, that stops corrosion and seals metal surfaces. Stops rust by means of a chemical reaction, and protects against further corrosion. Can be applied in any weather.

(18)—Precision Drilling

Taylor Manufacturing Corp. — 4 page illustrated bulletin No. 752. The "Hi-eff" drill press with speed range from 800 to 10,000 R.P.M. in steps of 100 R.P.M. and for holes from .002 inch to 1/8 inch is fully described. A universal dividing head is also described. Specifications are given.

(19)—Universal Grinder

Landis Tool Co.—16-page illustrated catalog No. J-538. The 14 inch Type "C", hydraulic universal grinder is presented and described with specifications, cutaway photographs and plant operating pictures. Typical setups are shown.

(20)—Power Press Brakes

The Columbia Machine Tool Co.—4 page illustrated bulletin No. 940-B. Steel power press brakes for metal from 12 gage to 3/4 inch, and for work lengths of from 4 to 12 feet, with speeds of from 40 to 25 per minute, are fully described.

(21)—Combustion Meter

The Hays Corp.—4 page illustrated bulletin. Excess air frequently reduces the heating value of fuel and the combustion meter described measures the carbon dioxide content, giving a true index of combustion efficiency. A typical chart is shown.

(22)—Motors

Howell Electric Motors Co.—4-page illustrated bulletin No. 1121. Totally enclosed "Red Band" type "K" motors requiring no piping or breathers for operation where explosion proof motors are required, are described. Cut-away picture shows details.

(23)—Threading Machines

Landis Machine Co.—8-page illustrated folder "Thread Tips". The "Lanhydro", hydraulically operated turning machine is shown and described. Threading tools and a complete list of products are described.

(24)—Storage Equipment

Ro-Tray Corp.—6 page illustrated folder. Standard and storage bins for storage of all kinds of materials are described. Savings through their use and construction are shown. Typical applications are illustrated.

(25)—Magnetic Separators

Stearns Magnetic Mfg. Co.—4 page illustrated bulletin No. 97. High speed type magnetic separator with a safety trap providing protection against current failure under operating conditions is described. Specifications and illustrations of construction and sizes.

(26)—Drilling and Reaming

W. F. & John Barnes Co.—4 page illustrated bulletin. Drilling and reaming operations are described. Reels are done at a high rate and with exceptionally close tolerances with the machines described. Same units are useful in machine and automotive industry.

(27)—Flexible Couplings

John Waldron Corp.—4 page illustrated catalog No. 55. Gear type flexible coupling, torque ring and special type couplings are described. Cut-away photographs fully cover their construction and structural features. Also floating shaft types are shown.

(28)—Tool Storage Equipment

Lyon Metal Products Co.—4 page illustrated catalog on steel tool storage equipment. A wide variety of storage for various classes of tools, bar stock, drill bits, and dies are shown. Saves labor and space.

(29)—Welding Electrodes

American Agile Corp.—4 page illustrated bulletin No. 113 and No. 120-B. Gives brief characteristics, mechanical properties and amperage of numerous welding electrodes. Typical jobs accomplished with the electrodes are shown. Price list covers all electrodes.

STEEL

Readers' Service Dept.
1213 West Third St.,
Cleveland, Ohio

Send me the literature I have circled below.

| | | | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | | | |

KKR
5-22-39

BUSINESS REPLY CARD
No Postage Stamp Necessary if Mailed in the United States

2c POSTAGE WILL BE PAID BY—

Name _____

Company _____ Title _____

Address _____

City _____ State _____

STEEL

Penton Building
CLEVELAND, OHIO

Unit Heaters

Continued from Page 64)

mate contact with the position. After assembled hairpin tube is in a lead-tin bath to insure normal contact and insure resistance.

hairpin tubes are positioned stamped header plate mild steel with tube end of plate, Fig. 5. Tubes so drainage is provided header plate to header ultimately in vertical position. To make a joint between the header plate requires extra. This weld is made as in Figs. 5 and 6.

Is Complete

must have complete joint a permanent bond and pipe as shown in section of the sketch. The welder must first cut 16-inch down into the pipe and fuse these together careful that he does not burn through the 0.113-inch side-tube. When this is done the joint cannot

be made tin coating on the pipe to make this joint any stronger. When properly welded, a small round file runs down into the joint, practicing it. As a last step, a small round file runs over the fused metal, cleaning and fusing as detailed must not extend beyond the pipe to decrease resistance for passage of steam or a heavy fillet tolerated. Welded header plate are two stamped header with a pipe fitting for turn steam connections. The unit is stamped and tack welded. Operator then welds contact, first by penetrating, and then by adding overlapping fillet.

Header welded joints are tested by 250 pounds hydrostatic pressure. 125 pounds steam pressure working pressures, pressure used is a minimum for operating pressure. Units have withstood 750 pounds static pressure, the case testing unit, without distortion of the header. Experienced welder will save approximately 98 per cent of cost on the first try.

Electric current is obtained from dual, portable, General Electric generator, direct current. Most welding is done at 100 amperes, although this varies with work. A special coated

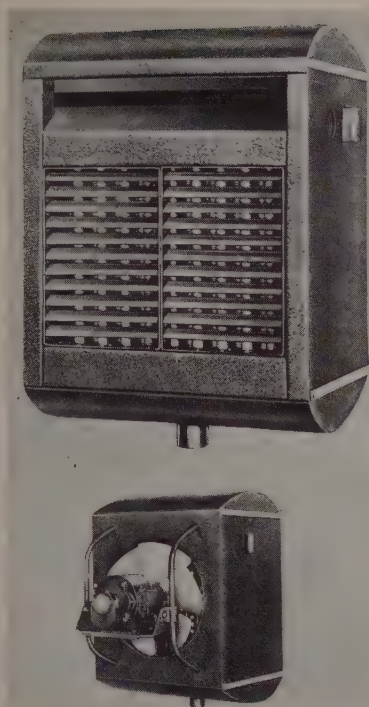


Fig. 7—Front and back views of Air-therm unit heater with propeller type fan

reverse-polarity rod with high ductility is necessary because of vibration when units are in use.

None of the welding requires elaborate jigs. Practically all jigs are made up of standard structural shapes with clamps for holding in position as shown in Fig. 6. In most cases the work need not be removed from the jig until welded, as most welding is on the inside. In almost all cases one man sets up the work in the jig.

Considerable saving in operating cost and maintenance resulted from the discontinuance of a 40-horsepower air compressor, all air hammers, and two multiple gang punches. Their removal also provided more floor space.

Welding Advantages

In this work, welding has several advantages. Reduction of approximately one-third in cost and 15 to 25 per cent in weight of case in realized. Joints are leakproof. All parts of the unit are integral and so will not shake loose. Units have less vibration, and better appearance because of smooth surface and no projecting surface rivets. The absence of rivet heads in path of air flow gives higher velocity of air with less turbulence. No punching, reaming and fitting of holes is necessary. Use of lighter stock in standard stock dimensions with less waste is permitted. Fewer sizes of steel are

carried in stock. An absolutely leakproof coil is obtained even under high steam pressures and strains of expansion and cooling. One of the most important advantages, however, is in the greater flexibility in handling variations in size and type.

Fundamentals of Heat Treating, by Portevin

■ *Introduction to the Study of Heat Treatment of Metallurgical Products*, by Albert Portevin; 246 pages, 69 illustrations, four tables; published by Penton Publishing Co., Cleveland; supplied by STEEL, Cleveland, for \$5; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London S.W. 1.

To acquire the fundamental knowledge and essential principles concerning the thermal treatments of steel in a simple manner involves an elementary course of teaching. With this in mind, Albert Portevin, distinguished French physical metallurgist, has made an attempt in his book to appeal mainly to the intuitive notions and to the experimental determinations and facts resulting from observation.

He has emphasized his plan in a simple manner by various supplementary chapters wherein elementary experiments are cited and laboratory study apparatus described. These chapters constitute the description of manipulations which clarify or supplement the preceding chapter, and also show the connection between the given facts and the actual use.

Subjects treated by the author include transformation points of steel, preliminary treatment of steel, quenching, hardened steels, hardening capacity of steel, tempering, classification of industrial steels, annealing, malleabilization of cast irons, heat treatment of light aluminum alloys, etc.

The reader will not encounter recipes, formulas or numerical results. The book is neither an encyclopedia nor a book of formulas. The aim of the author has been to include ideas and directions to interpret and understand the phenomena and solve the difficulties which actually occur in the heat treatment of various commodities.

Professor Portevin has preferred to sacrifice somewhat the rigorous literary style in favor of simplicity and clearness inasmuch as his many years of teaching have convinced him that it is the most suitable.

Research engineers, metallurgical students and steel plant metallurgists, as well as others engaged in metallurgical investigation and the heat treatment of ferrous and non-ferrous metals, will find this work of inestimable value.

Cupola Charging

(Concluded from Page 57)

ably less danger from overheating or from gas.

Eliminates expensive cupola building. With the mechanical charging methods today there is no longer a need for a separate cupola building or an expensive charging floor. Elimination of these items in many cases will pay for a charging system.

Experience also shows that good housekeeping and mechanical charging in the cupola department invariably lead to more efficient methods throughout the plant, thus improving the efficiency.

In the past 10 years much progress has been made by the builders of charging equipment and today a variety of tested designs adaptable to a wide range of requirements are available.

Treating Zinc Surfaces

■ A new method of treating the surfaces of zinc, zinc-coated, and galvanized products before finishing lacquer, enamel, paint or varnish is applied has been developed by Maas & Waldstein Co., 438 Riverside avenue, Newark, N. J.

The zinc products are dipped in or wiped with a solution of "Zinsol." This causes the formation of an alloy, consisting of zinc and another metal, to form on the surface. This alloy is chemically inert to moisture, atmosphere and organic finishes generally, so that it forms a stable foundation for any desired kind of finish.

Activities of Steel Users, Makers

■ BLAW-KNOX Co., Pittsburgh, has booked a contract for equipment for Dominion Steel & Coal Corp.'s two new open hearths at Sydney, Nova Scotia. The order includes reversing valves, complete with operating mechanisms, and all water-cooled doors and frames. Arthur G. McKee & Co., Cleveland, has the general contract for the furnaces, which will be of tilting type with rated capacity of 250 tons, (STEEL, April 10, p. 27).

Trundle Engineering Co., consultant management engineers, Cleveland, has opened a Chicago office in the City National Bank building, with S. A. Peck, vice president, in charge.

Union Tube Products Co., 67 Broad street, New York, has been organized to deal in iron and steel, nonferrous scrap and surplus materials. Philip Kafka, formerly associated with Otto Kafka, New York, is president.

C. M. Kemp Mfg. Co., maker of gas burners and furnaces, Baltimore, has appointed W. C. Green Co., Cincinnati, as representative in Cincinnati, Columbus and Dayton and adjacent territory. It has also appointed Beltaire & Drissen, Detroit, as representatives for Michi-

gan and adjacent Ohio, Buffalo and Y., to cover western state, and H. G. Mounting, Birmingham, Ala. Georgia and Tennessee.

Harnischfeger Corp. has received an order from Steel Co., Chicago, traveling cranes to cost \$100,000, for installation at Indiana Harbor, Ind.

Baldwin-Southwark, a subsidiary of Baldwin Locomotive Co., has received an order for 1,000-horsepower hydraulic cranes from the city of High Point, N. C. Value of order is about \$100,000.

Industrial truck division of Haulage Co., Cleveland, has appointed Materials Handling Co., 709 Arch street, Philadelphia, district sales representative. J. E. Freemann is district manager and will be assisted by W. J. Mumma.

Wickwire Spencer, a subsidiary of American Wire Corp., New York, has their combined general eastern district sales office at 41 East Forty-second street, where they had been located in larger quarters at 500 Broadway.

Universal Power Co. has appointed the following representatives for the sale of welding equipment, electrodes and arc welding equipment: Eugene Beeler, Arc Welding Co., Columbus, O.; John L. Wayne, Ind.; Snyder & Youngstown, O., and M. J. Hinchinson, Hutchinson, Kan.

Maremont Automotive Inc., Chicago, has purchased a new muffler equipment from Battery Co., a subsidiary of Madison, Wis., which produces dies, patterns, blue prints and equipment under the Burgess name. The new muffler equipment will be made at Maremont's new muffler factory in Chicago.

American Chemical Co., Ambler, Pa., will enter into a series of affiliated firms in foreign countries at a conference to be held on June 28 to June 30. Three days devoted to technical matters. American Chemical Co. Ambler and visits will include historic spots in Philadelphia and Washington. It will also be made to see products of the chemical industry and the actual services in auto-

For all Purposes

LESCHEN

WIRE ROPE



ESTABLISHED 1857

A. Leschen & Sons Rope Co.

5909 Kennerly Avenue
ST. LOUIS, MO.

New York 87 to 90 West Street

Chicago 810 W. Washington Blvd.

Denver 1554 Wazee Street

San Francisco 520 Fourth Street

Round Strand
Flattened Strand
"P. F. S."

Non-Rotating
Preformed
Steel Clad
Locked Coil
Regular Lay
Lang's Lay
Hemp Center
Wire Rope Center
Metallic Core
Seale - Filler Wire
Warrington

78

Research Work

...d from Page 73)
...nt-Magnet Alloys," by
...etteridge, of Bristol;
...t of Nitrogen Additions
...tment on the Proper-
...Chromium Steels," by
...nk and R. P. Garner,
...partment, Imperial
...ustries (Alkali), Ltd.,
...A Note on the Slow
...gots," by W. J. Rees,
...l "The Interpretation of
...es and Some Applica-
...ous Alloys," by T. F.
...ish Steel Corp., Ltd.,
...g Inclusions and Acid
...Refining of High-Car-
...oy Dr. Ing. Haakon
...Philadelphia, Pa.; "Note
...ities in the Resistance-
...Curves of Commercial-
...and Steel," by Dr. C.
...r. F. W. Jones, Re-
...batories, Metropolitan-
...ical Co., Ltd., Man-

Welding
New Volume

...ing in Design, Manufac-
...struction, simulated
...pages, 6 x 9 inches;
...ed illustrations; pub-
...ames F. Lincoln Arc
...oundation, Cleveland;
...STEEL, Cleveland, for
...ope by Penton Publish-
...Caxton House, West-
...ndon S.W.1.
...by trustees of the
...this volume contains
...studies of welding by
...ed leaders in various
...industry. The studies
...standing papers in the
...000 award program
...19, 1938).
...he provides scientific
...l schools, colleges and
...engineering bodies and
...well as industrial exec-
...ticials, a large volume
...welding. It is valuable
...ners, engineers, archi-
...ction officials and
...t papers are complete,
...ing abstracted compre-
...ause of great length of
...All photographs and
...sential to clear presen-
...cluded. Each study in-
...s, calculations, proced-
...her pertinent informa-
...g how advantages at-
...ure welded construction

...is divided into ten sec-
...containing a number of
...the sections cover auto-
...craft, railroad, water-
...rural, furniture and fix-
...mercial welding; contain-
...ery and jigs and fix-



*First.. IN
Safety First*

AN EXCLUSIVE YALE
SAFETY STORY

Before buying your next chain hoist, give an EXTRA thought to safety—then buy Yale. For Yale features safety advances that can be found on no other hoist.

The EXCLUSIVE Safety Hook for example. Drop forged of special steel, this unique hook gives visible warning when overloaded, opening slowly—without fracture—before any other part of the hoist is strained. Guaranteed to stand up to 150% of its rated capacity without changing dimensions, the Yale hook is a safety valve that cannot fail!

In addition, mechanical perfection is guaranteed by swiveling the hook on heavy duty, totally enclosed ball bearings—and swinging it fore and aft on a cross head. This provides free, easy, and UNIVERSAL movement at any angle.

Only a Yale distributor can supply the Yale Safety Hook. Contact him for free catalogue which gives a full description of the Yale line.



Capacities:
300 lbs.—40 tons



THE YALE & TOWNE MFG. CO.
PHILADELPHIA DIVISION, PHILADELPHIA, PA., U. S. A.
IN CANADA: ST. CATHARINES, ONT.

New Tin-Plate Mill

(Concluded from Page 68)

to shearing lines by tractor. Of six specially designed shear lines, four have reciprocating lever crank-type shears easily adjustable to synchronize with strip speeds up to 350 feet per minute. They cut strip into any length between 13 and 52 inches. Side trimmers can be set to a maximum width of 36 inches. Those on reciprocating shear lines use a new and quickly adjustable mounting for cutters and driving spindles. Bearing cones and cutters are mounted on sleeves, keyed to spindles. These

sleeves are positioned easily in housings which are screw adjusted with respect to center line of strip.

The other two shearing lines are equipped with rotary drum shears designed so knives synchronize with strip speeds regardless of length of cut. Strip speed is between 150 and 450 feet per minute.

Material is constantly checked by flying micrometers. Off-gage plates are thrown out automatically, limiting the stack to plates within definite gage limits. Stock to be tinned is delivered by tractor to white pickling department which consists of two acid tanks and a cold rinse tank under an overhead monorail system.

Special pickling cranes, an overhead rail, and 2400 pounds of shears advanced as required definite time at each.

As pickled plates come from tank, they are transferred by hand to special tractors to transfer to tinning machines. At tinning machines, plates are transferred by hand to feeder boshes, a device with unique features which insure uniform delivery of plates to tinning machines.

Five 75-inch and nine 75-inch machines are installed down center of building. One long ventilating duct provides ample working space for tractors at feed and delivery and at same time permits line construction of plates. The 75-inch machines are arranged for either two row feeding as required.

As plates come from feeder, they are taken into the metal side of the machine on the oil side of the pots are welded from plate and are individually heated by natural gas fired heating elements. Air proportioning equipment with automatic temperature

Hoods Removed

Catcher delivers tin washers where excess in softened water or line solution. Clean plates through the branner, vacuum and pressure and below the sheets, lute cleanliness of sheet removal of last traces the plate. Continuous flow, double or triple moves on to specially matic piler which material in neat scratching.

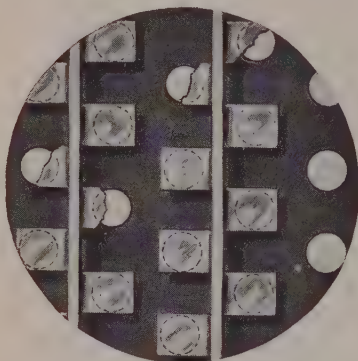
Fork type tractors from pilers and delivery sorting room. Here are closely inspected rows of steel tables to assure uniform are specially trained to the slightest flaw. As in relays and special rest rooms for the assorting room.

The two side aisles are extra wide to provide space for easy trip. High intensity, mercury producing a uniform of not less than 19 foot

Tin mill warehouse feet, is served by two 120-foot span and providing loading space under as a car loading platform full length of building

PEABODY SCRUBBERS

Provide Clean Gas, Free From Moisture



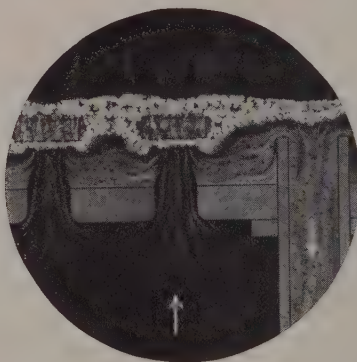
Plan view of Peabody Scrubber, showing staggered plate openings and baffles.

THE PEABODY SCRUBBER solves, at moderate cost for installation and operation, the problem of removing suspended particles to any degree desired. Whether your requirement is for large or small capacity—for removal of dust, ash, fog, fume, bacteria, fats, lampblack or other elements, Peabody equipment, designed by Peabody engineers, will meet the need.

Units for cleaning and drying air and gas can also be built into any present washers, improving their effectiveness greatly. We would welcome an opportunity to discuss your problems.

The Peabody Scrubber uses only a small volume of water or other liquid at 10 to 15 pounds pressure.

It is the patented design of grid and baffle arrangement which assures thoroughness of air and gas cleaning. Tortuous passages and high velocity liquor sprays are unnecessary.



All particles are shot directly at a wetted baffle. On impact they are trapped in the liquid.

PEABODY
Bulletin H-201
Describes the
Triple Action
Scrubber Fully.
Send for a Copy.

PEABODY
ENGINEERING
CORPORATION

580 Fifth Avenue, New York
OFFICES IN PRINCIPAL CITIES

Low Prices Drive In Heavy Tonnage Steelmaking To Derive Support From Sheet, Strip Orders

MARKET IN TABLOID ★

Demand

Quieter, following extensive coverage in flat-rolled.

Prices

Revised slightly on sheets, strip and bars.

Production

Dropped 1½ points to 45½ per cent.

buying of sheets and strip, induced by reshaping, is expected to retard the declining steelmaking, if not turn the rate moderately upward. Producers increased operations last week with sharp reductions in a few districts. National average 1½ points to 45 per cent. of stability has returned to flat-rolled steel, but largely for the same reason that it has not after the house burns down. Consumers have covered future needs—some for the remainder of the year—and are out of the market, hence the pressure for shaded prices has

been booked at the expense of prices merely deferred from the future, no benefit from the heavy tonnage accrues to mills over the long run in addition to actual loss in dollar volume, this week's last fall's price collapse has further harm—causing skepticism among buyers regarding the stability of quotations, not only on sheets but on other products as well.

All the commoner grades of steel now have been established for third quarter. Announcements earlier than usual, being timed to quell the situation brought about by the chaotic strip market. Net changes in quotations for flat-rolled through revisions in quantity and base prices are slight compared with those of a few weeks ago. Substantial increases shown, however, over the bargain figures in effect.

Consumption Fairly Up to Output Gains

Not influenced by price considerations has been steady lately, with steel consumption in many districts tending upward slightly. Sales out of the country steady or higher compared with a month ago, some hesitancy occasioned by the break in the market. Warehouses are revising their quotations to reflect changes made by producers.

Sales of automobiles so far this month have been better than a seasonal gain compared with last year. Partly reflecting this situation, motor-

car assemblies last week showed an unexpected increase of nearly 8000 units. The total of 80,145 compares with 46,810 a year ago. General Motors, boosting output from 27,120 to 31,885, and Ford, with an upturn from 16,900 to 20,630, accounted for most of the latest rise. Chrysler increased, from 17,690 to 17,900, but all others dropped from 10,665 to 9730.

Motor companies are proceeding steadily with tool and die work for 1940 models. Heavy shipments of steel for the new cars will not be required for a number of weeks, a factor that will prevent a sharp upturn immediately in production of the flat-rolled products booked lately.

Tin Plate Operations Hold; Quotations Are Reaffirmed

Tin plate specifications retain recent gains, with production holding at 70 per cent. Demand shortly will reach its spring peak. Tin plate prices, while not included in the late price cutting, have been reaffirmed.

Railroad steel markets are slow, with few inquiries active for equipment or track material. Some shops closed during the coal mining tieup are reopening.

Great Britain is understood to have closed with mills in this country on its recent inquiry for 100,000 tons of galvanized corrugated sheets. Of this total 40,000 tons is said to have been placed with one producer, the balance divided among other interests.

While last week's drop in steelmaking brought the rate to a new low for the year to date, output continues well above the 30 per cent figure in effect a year ago. Several districts were up slightly, including gains of 2 points to 57 per cent at Birmingham, 2½ points to 37½ at Buffalo and 4½ points to 50 at Cleveland.

Pittsburgh dropped 3 points to 33 and Chicago was down 1 point to 45½. Sharpest declines were 8 points to 44 at Cincinnati; 11 points to 53 at Wheeling and 12 points to 39 at St. Louis. Unchanged areas were eastern Pennsylvania at 37, Detroit at 59, New England at 45 and Youngstown at 42.

Scrap continues quiet. A price reduction at Pittsburgh lowers the scrap composite 16 cents to \$13.96, lowest since last October.

COMPOSITE MARKET AVERAGES

| | May 20 | May 13 | May 6 | One Month Ago Apr., 1939 | Three Months Ago Feb., 1939 | One Year Ago May, 1938 |
|---------------------|---------|---------|---------|--------------------------------|-----------------------------------|------------------------------|
| Iron and Steel | \$35.63 | \$35.72 | \$36.21 | \$36.34 | \$36.37 | \$38.50 |
| Finished Steel | 55.70 | 56.10 | 56.50 | 56.50 | 56.50 | 61.70 |
| Steelworks Scrap.. | 13.96 | 14.12 | 14.12 | 14.64 | 14.87 | 11.47 |

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, sh. pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plate hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and

| Finished Material | May 20, 1939 | April 1939 | Feb. 1939 | —May 1938 | Pig Iron | May 20, 1939 | Apr. 1939 |
|--|-----------------|---------------|-----------|--------------|---|-----------------|--------------|
| Steel bars, Pittsburgh | 2.15c | 2.25c | 2.25c | 2.45c | Bessemer, del. Pittsburgh | \$22.34 | \$22.34 |
| Steel bars, Chicago | 2.15 | 2.25 | 2.25 | 2.50 | Basic, Valley | 20.50 | 20.50 |
| Steel bars, Philadelphia | 2.47 | 2.57 | 2.57 | 2.77 | Basic, eastern, del. Philadelphia | 22.34 | 22.34 |
| Iron bars, Terre Haute, Ind. | 2.05 | 2.15 | 2.15 | 2.35 | No. 2 foundry, Pittsburgh | 22.21 | 22.21 |
| Shapes, Pittsburgh | 2.10 | 2.10 | 2.10 | 2.25 | No. 2 foundry, Chicago | 21.00 | 21.00 |
| Shapes, Philadelphia | 2.215 | 2.215 | 2.215 | 2.465 | Southern No. 2, Birmingham | 17.38 | 17.38 |
| Shapes, Chicago | 2.10 | 2.10 | 2.10 | 2.30 | Southern No. 2, del. Cincinnati | 20.89 | 20.89 |
| Plates, Pittsburgh | 2.10 | 2.10 | 2.10 | 2.25 | No. 2X, del. Phila. (differ. av.) | 23.215 | 23.215 |
| Plates, Philadelphia | 2.15 | 2.15 | 2.15 | 2.445 | Malleable, Valley | 21.00 | 21.00 |
| Plates, Chicago | 2.10 | 2.10 | 2.10 | 2.30 | Malleable, Chicago | 21.00 | 21.00 |
| Sheets, hot-rolled, Pittsburgh | 2.00 | 2.15 | 2.15 | 2.40 | Lake Sup., charcoal, del. Chicago | 28.34 | 28.34 |
| Sheets, cold-rolled, Pittsburgh | 3.05 | 3.20 | 3.20 | 3.45 | Gray forge, del. Pittsburgh | 21.17 | 21.17 |
| Sheets, No. 24 galv., Pittsburgh | 3.50 | 3.50 | 3.50 | 3.80 | Ferromanganese, del. Pittsburgh | 85.33 | 85.33 |
| Sheets, hot-rolled, Gary | 2.00 | 2.15 | 2.15 | 2.50 | | | |
| Sheets, cold-rolled, Gary | 3.05 | 3.20 | 3.20 | 3.25 | | | |
| Sheets, No. 24 galv., Gary | 3.50 | 3.50 | 3.50 | 3.90 | | | |
| Bright bess., basic wire, Pitts. | 2.60 | 2.60 | 2.60 | 2.90 | | | |
| Tin plate, per base box, Pitts. | \$5.00 | \$5.00 | \$5.00 | \$5.35 | | | |
| Wire nails, Pittsburgh | 2.45 | 2.45 | 2.45 | 2.75 | | | |

Semifinished Material

| | | | | |
|---|---------|---------|---------|---------|
| Sheet bars, Pittsburgh, Chicago.. | \$34.00 | \$34.00 | \$34.00 | \$37.00 |
| Slabs, Pittsburgh, Chicago | 34.00 | 34.00 | 34.00 | 37.00 |
| Rerolling billets, Pittsburgh | 34.00 | 34.00 | 34.00 | 37.00 |
| Wire rods, No. 5 to $\frac{3}{8}$ -inch, Pitts. | 43.00 | 43.00 | 43.00 | 47.00 |

Scrap

| | | |
|---|---------|---------|
| Heavy melting steel, Pittsburgh | \$14.25 | \$15.00 |
| Heavy melt. steel, No. 2, E. Pa. | 12.75 | 13.00 |
| Heavy melting steel, Chicago | 12.75 | 13.00 |
| Rails for rolling, Chicago | 17.25 | 17.00 |
| Railroad steel specialties, Chicago | 14.75 | 15.00 |

Coke

| | | |
|--------------------------------------|--------|--------|
| Connellsville, furnace, ovens | \$3.75 | \$3.00 |
| Connellsville, foundry ovens | 5.00 | 5.00 |
| Chicago, by-product fdry., del. | 10.50 | 10.00 |

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Except when otherwise designated, prices are base, f.o.b. cars.

Sheet Steel

| Hot Rolled | |
|----------------------------|-------|
| Pittsburgh | 2.00c |
| Chicago, Gary | 2.00c |
| Cleveland | 2.00c |
| Detroit, del. | 2.00c |
| Buffalo | 2.00c |
| Sparrows Point, Md. | 2.00c |
| New York, del. | 2.24c |
| Philadelphia, del. | 2.17c |
| Granite City, Ill. | 2.10c |
| Middletown, O. | 2.00c |
| Youngstown, O. | 2.00c |
| Birmingham | 2.00c |
| Pacific Coast points | 2.50c |
| Cold Rolled | |
| Pittsburgh | 3.05c |
| Chicago, Gary | 3.05c |
| Buffalo | 3.05c |
| Cleveland | 3.05c |
| Detroit, delivered | 3.15c |
| Philadelphia, del. | 3.37c |
| New York, del. | 3.39c |
| Granite City, Ill. | 3.15c |
| Middletown, O. | 3.05c |
| Youngstown, O. | 3.05c |
| Pacific Coast points | 3.65c |
| Galvanized No. 24 | |
| Pittsburgh | 3.50c |
| Chicago, Gary | 3.50c |
| Buffalo | 3.50c |
| Sparrows Point, Md. | 3.50c |
| Philadelphia, del. | 3.67c |
| New York, delivered | 3.74c |
| Birmingham | 3.50c |

| | | |
|--|--------|--------|
| Granite City, Ill. | 3.60c | |
| Middletown, O. | 3.50c | |
| Youngstown, O. | 3.50c | |
| Pacific Coast points | 4.00c | |
| Black Plate, No. 29 and Lighter | | |
| Pittsburgh | 3.05c | |
| Chicago, Gary | 3.05c | |
| Granite City, Ill. | 3.15c | |
| Long Ternes No. 24 Unassorted | | |
| Pittsburgh, Gary | 3.95c | |
| Pacific Coast | 4.65c | |
| Enameling Sheets | | |
| | No. 10 | No. 20 |
| Pittsburgh | 2.75c | 3.35c |
| Chicago, Gary .. | 2.75c | 3.35c |
| Granite City, Ill. | 2.85c | 3.45c |
| Youngstown, O. | 2.75c | 3.35c |
| Cleveland | 2.75c | 3.35c |
| Middletown, O. | 2.75c | 3.35c |
| Pacific Coast | 3.35c | 3.95c |

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

| Chrome-Nickel | | | |
|------------------|---------|---------|---------|
| | No. 302 | No. 304 | |
| Bars | 24.00 | 25.00 | |
| Plates | 27.00 | 29.00 | |
| Sheets | 34.00 | 36.00 | |
| Hot strip | 21.50 | 23.50 | |
| Cold strip | 28.00 | 30.00 | |
| Straight Chromes | | | |
| | No. 410 | No. 430 | No. 442 |
| Bars | 18.50 | 19.00 | 22.50 |
| | | | 27.50 |

| | | | | |
|--------------|-------|-------|-------|-------|
| Plates .. | 21.50 | 22.00 | 25.50 | 30.50 |
| Sheets .. | 26.50 | 29.00 | 32.50 | 36.50 |
| Hot strip .. | 17.00 | 17.50 | 23.00 | 28.00 |
| Cold stp. .. | 22.00 | 22.50 | 28.50 | 36.50 |

Steel Plate

| | |
|----------------------------|-------|
| Pittsburgh | 2.10c |
| New York, del. | 2.29c |
| Philadelphia, del. | 2.15c |
| Boston, delivered | 2.42c |
| Buffalo, delivered | 2.33c |
| Chicago or Gary | 2.10c |
| Cleveland | 2.10c |
| Birmingham | 2.10c |
| Coatesville, base | 2.10c |
| Sparrows Point, base | 2.10c |
| Claymont, del. | 2.10c |
| Youngstown | 2.10c |
| Gulf ports | 2.45c |
| Pacific Coast points | 2.60c |

Steel Floor Plates

| | |
|---------------------------|-------|
| Chicago | 3.35c |
| Gulf ports | 3.70c |
| Pacific Coast ports | 3.95c |
| Pittsburgh | 3.35c |

Standard Shapes

| | |
|-------------------------|------------|
| Pittsburgh | 2.10c |
| Philadelphia, del. | 2.21 1/4 c |
| New York, del. | 2.27c |
| Boston, delivered | 2.41c |
| Bethlehem | 2.10c |
| Chicago | 2.10c |
| Cleveland, del. | 2.30c |

Tin and Tin Plate

| Tin Plate, Co. | |
|------------------------|--|
| Pittsburgh, Gary | |
| Granite City, | |
| Mfg. Terne P. | |
| Pittsburgh, Gary | |
| Granite City, | |

Bars

| Soft | |
|--------------------------|------------|
| | (Base, 3) |
| Pittsburgh | |
| Chicago or Gary | |
| Duluth | |
| Birmingham | |
| Cleveland | |
| Buffalo | |
| Detroit, delivered | |
| Philadelphia, | |
| Boston, delivered | |
| New York, del. | |
| Gulf ports | |
| Pacific Coast | |
| Rail | |
| | (Base, 15) |
| Pittsburgh | |
| Chicago or Gary | |
| Detroit, delivered | |
| Cleveland | |

| | |
|-----------------|---------------|
| ..... | 2.00c |
| ..... | 2.00c |
| ..... | 2.35c |
| nts..... | 2.60c |
| | |
| ..... | 2.05c |
| ..... | 2.37c |
| d..... | 3.50-8.00c |
| ing..... | |
| ight lengths, | |
| istributors | |
| Buffalo | |
| Young, | |
| Pitts..... | 2.05c |
| ..... | 2.15c |
| ..... | 2.40c |
| ts..... | 2.50c |
| ..... | 2.22c |
| ight lengths, | |
| istributors | |
| y, Chi- | |
| Cleve- | |
| am..... | 1.90c |
| ..... | 2.00c |
| ..... | 2.25c |
| ..... | 2.35c |
| cts..... | |
| ago-Birm. base | |
| g in carloads | |
| alls..... | \$2.45 |
| alls..... | \$2.45 |
| und)..... | |
| ..... | 3.15c |
| es..... | 3.40c |
| e, stand- | |
| g two- | |
| od spool | |
| at cattle, | |
| ..... | \$2.62 |
| wire..... | 2.95c |
| ..... | 3.35c |
| ng (base | |
| ..... | 67.00 |
| le ties, | |
| urn)..... | 56.00 |
| uring Trade | |
| ve.- Chicago- | |
| except spring | |
| | |
| ..... | 2.60c |
| ..... | 2.65c |
| ..... | 3.20c |
| ..... | \$2 higher on |
| nd spring wire. | |

Strip and Hoops

(Base, hot-rolled, 1 to 20 tons;
cold-rolled, 3 to 25 tons)

Hot Strip, 12-inch and less

Pittsburgh, Chicago,
Gary, Cleveland,
Youngstown, Middle-

town, Birmingham.... 2.00c

Detroit, del. 2.10c

Philadelphia, del. 2.32c

New York, del. 2.36c

Cooperage hoop, Youngs.,
Pitts.; Chicago, Birm. 2.10c

Cold strip, 0.25 carbon
and under, Pittsburgh,
Cleveland, Youngstown 2.80c

Chicago 2.90c

Detroit, del. 2.90c

Worcester, Mass. 3.00c

Carbon Cleve., Pitts.

0.26—0.50..... 2.80c

0.51—0.75..... 4.30c

0.76—1.00..... 6.15c

Over 1.00..... 8.35c

Worcester, Mass \$4 higher.

Commodity Cold-Rolled Strip

Pitts.-Cleve.-Youngstown 2.95c

Detroit, del. 3.05c

Worcester, Mass. 3.35c

Lamp stock up 10 cents.

Rails, Fastenings

(Gross Tons)

Standard rails, mill. \$40.00

Relay rails, Pittsburgh
20—100 lbs. 32.50-35.50

Light rails, billet qual.,
Pitts., Chicago, B'ham. \$40.00

Do., re-rolling quality.. 39.00

Cents per pound

Angle bars, billet, mills. 2.70c

Do., axle steel 2.35c

Spikes, R. R. base 3.00c

Track bolts, base 4.15c

Car axles forged, Pitts.,
Chicago, Birmingham. 3.15c

Tie plates, base 2.15c

Base, light rails 25 to 60 lbs.,
20 lbs., up \$2; 16 lbs. up \$4; 12
lbs. up \$8; 8 lbs. up \$10. Base
railroad spikes 200 kegs or
more; base plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Bir-
mingham, Chicago. Discounts
to legitimate trade as per Dec.
1, 1932, lists, carloads 5% up;
full containers additional 10%.

Carriage and Machine

½ x 6 and smaller..... 68.5 off

Do. larger, to 1-in. 66 off

Do. 1½ and larger..... 64 off

Tire bolts 52.5 off

Stove Bolts

In packages with nuts attached

72.5 off; in packages with
nuts separate 72.5-12½ off;

bulk 84 off on 15,000 of 3-inch
and shorter, or 5000 over 3-in.

Step bolts 60 off

Elevator bolts 60 off

Plow bolts 68.5 off

Nuts

Semifinished hex. U.S.S. S.A.E.

6-inch and less. 67 70

¾-1-inch 64 65

1½ and larger.. 62 62

Hexagon Cap Screws

Upset, 1-in., smaller..... 67.5 off

Square Head Set Screws

Upset, 1-in., smaller. 75.0 off

Headless set screws..... 70.0 off

Piling

Pitts., Chgo., Buffalo.... 2.40c

Gulf ports 2.75c

Rivets, Washers

Structural, Pittsburgh,
Cleveland, Chicago ... 3.40c

¾-inch and smaller,

Pitts., Chi., Cleve.... .65-10 off

Wrought washers, Pitts.,
Chi., Phila., to jobbers

and large nut, bolt

mfrs. l.c.l. \$5.40; c.l. \$5.75 off

**Welded Iron,
Steel Pipe**

Base discounts on steel pipe.

Pitts., Lorain, O., to consumers

in carloads. Gary, Ind., 2 points

less on lap weld, 1 point less

on butt weld. Chicago delivery

2½ and 1½ less, respectively.

Wrought pipe, Pittsburgh base.

Butt Weld

Steel

In. Blk. Galv.

¾ 63½ 54

¾ 66½ 58

1—3 68½ 60½

Iron

¾ 30 13

1—1½ 34 19

1½ 38 21½

2 37½ 21

Lap Weld

Steel

2 61 52½

2½—3 64 55½

3½—6 66 57½

7 and 8 65 55½

9 and 10 64½ 55

11 and 12 63½ 54

Iron

2 30½ 15

2½—3½ 31½ 17½

4 33½ 21

4½—8 32½ 20

9—12 28½ 15

Line Pipe

Steel

1 to 3, butt weld 67½

2, lap weld 60

2½ to 3, lap weld 63

3½ to 6, lap weld 65

7 and 8, lap weld 64

10-inch lap weld 63½

12-inch, lap weld 62½

Iron

¾ butt weld 25 7

1 and 1½ butt weld 29 13

1½ butt weld 33 15½

2 butt weld 32½ 15

1½ lap weld 23½ 7

2 lap weld 25½ 9

2½ to 3½ lap weld 26½ 11½

4 lap weld 28½ 15

4½ to 8 lap weld.. 27½ 14

9 to 12 lap weld... 23½ 9

Boiler Tubes

Carloads minimum wall seam-
less steel boiler tubes, cut
lengths 4 to 24 feet; f.o.b. Pitts-
burgh, base price per 100 feet
subject to usual extras.

Lap Welded

Sizes Gage Steel Char-

coal Iron

1½" O.D. 13 \$ 9.72 \$23.71

1¾" O.D. 13 11.06 22.93

2" O.D. 13 12.38 19.35

2½" O.D. 13 13.79 21.68

2¾" O.D. 12 15.16

2½" O.D. 12 16.58 26.57

2¾" O.D. 12 17.54 29.00

3" O.D. 12 18.35 31.36

3½" O.D. 11 23.15 39.81

4" O.D. 10 28.66 49.90

5" O.D. 9 44.25 73.93

6" O.D. 7 68.14

Seamless

Sizes Gage Hot Cold

1" O.D. 13 \$ 7.82 \$ 9.01

1¼" O.D. 13 9.26 10.67

1½" O.D. 13 10.23 11.79

1¾" O.D. 13 11.64 13.42

2" O.D. 13 13.04 15.03

2½" O.D. 13 14.54 16.76

2¾" O.D. 12 16.01 18.45

2½" O.D. 12 17.54 20.21

2¾" O.D. 12 18.59 21.42

3" O.D. 12 19.50 22.48

3½" O.D. 11 24.62 28.37

4" O.D. 10 30.54 35.20

4½" O.D. 10 37.35 43.04

5" O.D. 9 46.87 54.01

6" O.D. 7 71.96 82.93

Cast Iron Pipe

Class B Pipe—Per Net Ton

6-in., & over, Birm.. \$42.00-43.00

4-in., Birmingham.. 45.00-46.00

4-in., Chicago..... 53.80-54.80

6-in. & over, Chicago 50.80-51.80

6-in. & over, east fdy. 46.00

Do., 4-in. 49.00

Class A Pipe \$3 over Class B

Std. ftgs., Birm., base \$100.00

Semifinished Steel

Re-rolling Billets, Slabs

(Gross Tons)

Pittsburgh, Chicago, Gary,
Cleve., Buffalo, Young,
Birm., Sparrows Point. \$34.00

Duluth (billets) 36.00

Detroit, delivered 36.00

Forging Quality Billets

Pitts., Chi., Gary, Cleve.,
Young, Buffalo, Birm.. 40.00

Duluth 42.00

Sheet Bars

Pitts., Cleveland, Young,
Sparrows Point, Buf-
falo, Canton, Chicago.. 34.00

Detroit, delivered 36.00

Wire Rods

Pitts., Cleveland, Chicago,
Birmingham No. 5 to ¾-

inch incl. 43.00

Do., over ¾ to 1½-in. incl. 48.00

Worcester up \$2; Galveston
up \$6; Pacific Coast up \$9.

Skelp

Pitts., Chi., Young, Buff.,
Coatesville, Sparrows Pt. 1.90c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur... \$3.75

Connellsville, fdry.. 4.75- 5.50

Connell. prem. fdry. 5.75- 6.25

New River fdry.... 6.50- 6.75

Wise county fdry... 5.50- 5.75

Wise county fur... 4.50- 4.75

By-Product Foundry

Newark, N. J., del.. 10.88-11.35

Chi., ov., outside del. 9.75

Chicago, del. 10.50

Terre Haute, del. .. 10.00

Milwaukee, ovens.. 10.50

New England, del.. 12.50

St. Louis, del. 11.00-11.50

Birmingham, ovens. 7.00

Indianapolis, del... 10.00

Cincinnati, del.... 9.75

Cleveland, del.... 10.30

Buffalo, del. 10.50

Detroit, del. 10.25

Philadelphia, del... 10.65

Coke By-Products

Spot, gal., freight allowed east
of Omaha

Pure and 90% benzol... 16.00c

Toluol, two degree.... 22.00c

Solvent naphtha 26.00c

Industrial xylol 26.00c

Per lb. f.o.b. Frankford and
St. Louis

Phenol (200 lb. drums) 16.25c

Do. (450 lbs.) 15.25c

Eastern Plants, per lb.

Naphthalene flakes, balls,

Pig Iron

Delivered prices include switching charges only as noted.
No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above
2.25 sil.; 50c diff. below 1.75 sil. Gross tons.

| Basing Points: | No. 2 Fdry. | Malle- able | Basic | Besse- mer |
|---------------------------|----------------|----------------|---------|---------------|
| Bethlehem, Pa. | \$22.00 | \$22.50 | \$21.50 | \$23.00 |
| Birdsboro, Pa. | 22.00 | 22.50 | 21.50 | 23.00 |
| Birmingham, Ala.† .. | 17.38 | .... | 16.38 | 22.00 |
| Buffalo | 21.00 | 21.50 | 20.00 | 22.00 |
| Chicago | 21.00 | 21.00 | 20.50 | 21.50 |
| Cleveland | 21.00 | 21.00 | 20.50 | 21.50 |
| Detroit | 21.00 | 21.00 | 20.50 | 21.50 |
| Duluth | 21.50 | 21.50 | .... | 22.00 |
| Erie, Pa. | 21.00 | 21.50 | 20.50 | 22.00 |
| Everett, Mass. | 22.00 | 22.50 | 21.50 | 23.00 |
| Granite City, Ill. | 21.00 | 21.00 | 20.50 | 21.50 |
| Hamilton, O. | 21.00 | 21.00 | 20.50 | .... |
| Neville Island, Pa. | 21.00 | 21.00 | 20.50 | 21.50 |
| Provo, Utah | 19.00 | .... | .... | .... |
| Sharpville, Pa. | 21.00 | 21.00 | 20.50 | 21.50 |
| Sparrow's Point, Md. | 22.00 | .... | 21.50 | .... |
| Swedeland, Pa. | 22.00 | 22.50 | 21.50 | 23.00 |
| Toledo, O. | 21.00 | 21.00 | 20.50 | 21.50 |
| Youngstown, O. | 21.00 | 21.00 | 20.50 | 21.50 |

†Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:

| | | | | |
|-------------------------------------|--------|-------|-------|-------|
| Akron, O., from Cleveland. | 22.39 | 22.39 | 21.89 | 22.89 |
| Baltimore from Birmingham. | 22.78 | .... | 21.66 | .... |
| Boston from Birmingham. | 22.12 | .... | .... | .... |
| Boston from Everett, Mass. | 22.50 | 23.00 | 22.00 | 23.50 |
| Boston from Buffalo | 22.50 | 23.00 | 22.00 | 23.50 |
| Brooklyn, N. Y., from Bethlehem | 24.50 | 25.00 | .... | .... |
| Canton, O., from Cleveland | 22.39 | 22.39 | 21.89 | 22.89 |
| Chicago from Birmingham | †21.22 | .... | .... | .... |
| Cincinnati from Hamilton, O. | 21.24 | 22.11 | 21.61 | .... |
| Cincinnati from Birmingham. | 21.06 | .... | 20.06 | .... |
| Cleveland from Birmingham. | 21.32 | .... | 20.82 | .... |
| Mansfield, O., from Toledo, O. | 22.94 | 22.94 | 22.44 | 22.44 |
| Milwaukee from Chicago | 22.10 | 22.10 | 21.60 | 22.60 |
| Muskegon, Mich., from Chicago, | .... | .... | .... | .... |
| Toledo or Detroit | 24.19 | 24.19 | 23.69 | 24.69 |
| Newark, N. J., from Birmingham | 23.15 | .... | .... | .... |
| Newark, N. J., from Bethlehem. . | 23.53 | 24.03 | .... | .... |
| Philadelphia from Birmingham. . | 22.46 | .... | 21.96 | .... |
| Philadelphia from Swedeland, Pa. | 22.84 | 23.34 | 22.34 | .... |
| Pittsburgh district from Neville | .... | .... | .... | .... |
| Island ..... | .... | .... | .... | .... |
| Saginaw, Mich., from Detroit. . | 23.45 | 23.45 | 22.95 | 22.95 |

(Neville base, plus 69c, 84c, and \$1.24 freight.)

| | |
|---------------------------------|--------|
| No. 2 Ma | |
| Fdry. ab | |
| St. Louis, northern | 21.50 |
| St. Louis from Birmingham. | †21.12 |
| St. Paul from Duluth | 23.63 |
| †Over 0.70 phos. | |

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., at \$26.50, base; \$27.74 delivered Philad.

Gray Forge

| | | |
|------------------------|---------|---------------|
| Valley furnace | \$20.50 | Lake Superior |
| Pitts. dist. fur. | 20.50 | do., del C |
| | | Lyles, Tenn. |

†Silvery

Jackson county, O., base: 6-6.50 per cent \$25
7-7.50—\$26.50; 7.51-8—\$27.00; 8-8.50—\$27.5
9-9.50—\$28.50; Buffalo, \$1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base; Prices are the same plus \$1 a ton.

†The lower all-rail delivered price from Jackson is quoted with freight allowed.

Manganese differentials in silvery iron and fer \$1 per ton add. Each unit over 3%, add \$1

Refractories

Per 1000 f.o.b. Works, Net Prices

| Fire Clay Brick | Super Quality |
|-------------------------------|---------------|
| Pa., Mo., Ky. | \$60.80 |
| First Quality | |
| Pa., Ill., Md., Mo., Ky. | 47.50 |
| Alabama, Georgia. | 47.50 |
| New Jersey | 52.50 |
| Second Quality | |
| Pa., Ill., Ky., Md., Mo. | 42.75 |
| Georgia, Alabama | 34.20 |
| New Jersey | 49.00 |
| Ohio | |
| First quality | 39.90 |
| Intermediate | 36.10 |
| Second quality | 31.35 |
| Malleable Bung Brick | |
| All bases | \$56.05 |
| Silica Brick | |
| Pennsylvania | \$47.50 |
| Joliet, E. Chicago. | 55.10 |
| Birmingham, Ala. | 47.50 |
| Ladle Brick | |
| (Pa., O., W. Va., Mo.) | |
| Dry press | \$28.00 |
| Wire cut | \$26.00 |

Imported dea
grains, net
Chester, Pa
timore base
Do. domestic
Do., f.o.b.
Wash., net
net ton, ba
Quickset ma
grains, f.o.
lah, Wash.
Bas
Net ton, f.o.
mouth Meet
Chrome brick
Chem. bonded
Magnesite bri
Chem. bonded

Fluorspar

Washed gra
paid, tide, r
Washed grave
Ky., net ton
all rail.
Do. barge
No. 2 lump.

Ferroalloy Prices

| | | | | | | |
|---|----------------|---|--------|--|----------|-----------------|
| Ferromanganese, 78-82%, tidewater, duty pd. | \$80.00 | bon, per lb. contained chrome | 16.50c | carlots, contr., net ton. | \$142.50 | contract, ca |
| Do., del. Pittsburgh. | 85.33 | Do., ton lots | 17.25c | Do, spot | 145.00 | ¼-in., lb. |
| Spiegeleisen, 19-21% dom. Palmerston, Pa., spot. | 28.00 | Do., less-ton lots | 17.75c | Do, contract, ton lots | 145.00 | Do, 2% |
| Do., 26-28%, Palmer- ton | 33.00 | Car- Ton loads lots ton | | Do, spot, ton lots. | 150.00 | Spot ¼ |
| Ferrosilicon, 50% freight allowed, c.l. | 69.50 | 2% carb. | 16.50c | 15-18% ti., 3-5% carbon, carlots, contr., net ton | 157.50 | Silicon Briquet |
| Do., ton lot | 80.50 | 1% carb. | 17.50c | Do, spot | 160.00 | carloads fr |
| Do., 75 per cent. | 126.00 | 0.10% carb. | 18.50c | Do, contract, ton lots. | 160.00 | lowed, ton |
| Spot, \$5 a ton higher. | | 0.20% carb. | 19.50c | Do, spot, ton lots. | 165.00 | Carload, spo |
| Silicomane, 2½ carbon. | 88.00 | Spot ¼c higher | | Alsifer, contract carlots, f.o.b. Niagara Falls, lb. | 7.50c | Less-ton lot |
| 2% carbon, 93.00; 1%, 103.00 | | Ferromolybdenum, 55- 65% molyb. cont., f.o.b. | | Do, ton lots | 8.00c | contract ca |
| Contract ton price \$11 higher; spot \$5 over contract. | | mill, lb. | 0.95 | Do, less-ton lots | 8.50c | bulk freight |
| Ferrotungsten, stand., lb. con. del. cars | 1.60-1.65 | Calcium molybdate, lb. molyb. cont., f.o.b. mill | 0.80 | Spot ¼c lb. higher | | lb. |
| Ferrovanadium, 35 to 40%, lb., cont. | 2.70-2.80-2.90 | Ferrotitanium, 40-45%, lb., con. ti., f.o.b. Niag- ara Falls, ton lots. | \$1.23 | Chromium Briquets, contr- tract, any quantity, freight allowed, lb. | 7.25c | Ton lots |
| Ferrophosphorus, gr. ton, c.l., 17-18% Rockdale, Tenn., basis, 18%, \$3 unitage, 58.50; electro- lytic, per ton, c. l., 23- 26% f.o.b. Monsanto, Tenn., 24% \$3 unitage | 75.00 | Do, less-ton lots | 1.25 | Do, spot carlots, bulk | 7.50c | Less-ton lots |
| Ferrochrome, 66-70 chro- mium, 4-6 carbon, cts. lb., contained cr., del. | 10.50c | 20-25% carbon, 0.10 max., ton lots, lb. | 1.35 | Do, ton lots | 8.00c | Spot ¼ |
| Do., ton lots | 11.25c | Do, less-ton lots. | 1.40 | Do, less-ton lots. | 8.25c | contract, c |
| Do., less-ton lots | 11.50c | Spot 5c higher | | Tungsten Metal Powder, according to grade, spot shipment, 200-lb. drum lots, lb. | \$2.00 | gross ton |
| 67-72% carloads, 2% car- | | Ferrocolumbium, 50-60%, contract, lb. con. col. f.o.b. Niagara Falls. | \$2.25 | Do, smaller lots. | 2.10 | Do, spot |
| | | Do, less-ton lots | 2.30 | Vanadium Pentoxide, contract, lb. contained | \$1.10 | Do, less-ton |
| | | Spot 1s 10c higher | | Do, spot | 1.15 | Spot ¼ |
| | | Technical molybdenum trioxide, 53 to 60% mo- lybdenum, lb. molyb. cont., f.o.b. mill. | 0.80 | Chromium Metal, 98% cr., 0.50 carbon max., contract, lb. con. | | Molybdenum |
| | | Ferro-carbon-titanium, 15- 18%, ti., 6-8% carb., | | chrome | 80.00c | 99%, f.o.b. |
| | | | | Do, spot | 85.00c | 200-lb. kegs, |
| | | | | 88% chrome, contract. | 79.00c | Do, 100-200 |
| | | | | Do, spot | 84.00c | Do, under 10 |
| | | | | Silicon Metal, 1% iron, | | Molybdenu |
| | | | | | | Briquets, 48- |
| | | | | | | lybdenum, p |
| | | | | | | contained, f |
| | | | | | | ducers' plant |

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

| Soft Bars | Bands | Hoops | Plates ½-in. & Over | Struc- tural Shapes | Floor Plates | Hot Rolled | Sheets Cold Rolled | Galv. No. 24 |
|-------------------|--------------------|-----------|--|---------------------------|-----------------|---------------|--------------------------|-----------------|
| ..... | 3.98 | 4.21 | 5.21 | 3.85 | 5.66 | 3.86 | 4.93 | 4.61 |
| ..... | 3.94 | 4.11 | 3.76 | 3.75 | 5.56 | 3.40 | 4.60 | 4.50 |
| ..... | 3.60 | 3.60 | 3.40 | 3.40 | 5.00 | 3.40 | .... | 4.43 |
| ..... | 3.80 | 3.95 | 3.65 | 3.65 | 5.00 | 3.70 | 5.05 | 4.30 |
| ..... | 4.00 | 4.15 | .... | 3.85 | 5.20 | 3.90 | .... | 5.40 |
| ..... | 3.60 | 3.97 | 3.77 | 3.55 | 5.40 | 3.50 | 4.55 | 4.40 |
| ..... | 3.60 | 3.75 | 3.75 | 3.55 | 5.15 | 3.50 | 4.60 | 4.50 |
| ..... | 3.50 | 3.65 | 3.65 | 3.55 | 5.33 | 3.50 | 4.70 | 4.62 |
| ..... | 3.43 | 3.58 | 3.83 | 3.75 | 5.42 | 3.58 | 4.65 | 4.74 |
| ..... | 3.85 | 3.82 | 3.82 | 3.80 | 5.43 | 3.57 | .... | 4.57 |
| ..... | 3.50 | 3.75 | 3.75 | 3.55 | 5.15 | 3.35 | 4.30 | 4.25 |
| ..... | 3.85 | 4.00 | 4.00 | 3.80 | 5.40 | 3.75 | 5.10 | 4.75 |
| ..... | 3.73 | 3.88 | 3.88 | 3.68 | 5.28 | 3.63 | 4.58 | 4.63 |
| ..... | 3.62 | 3.72 | 3.72 | 3.47 | 5.07 | 3.38 | 3.32 | 4.53 |
| ..... | 4.15 | 4.30 | 4.30 | 4.10 | 5.70 | 4.10 | .... | 4.75 |
| ..... | 4.00 | 4.15 | 4.15 | 3.95 | 5.71 | 3.90 | .... | 5.25 |
| ..... | 3.90 | 4.05 | 4.05 | 3.85 | 5.80 | 3.80 | .... | 4.40 |
| ..... | 4.64 | 4.79 | 4.79 | 4.41 | 6.01 | 4.47 | .... | 5.47 |
| ..... | 3.50 | 3.65 | 3.65 | 3.45 | 5.83 | 3.40 | .... | 4.75 |
| ..... | 3.85 | 4.65 | 4.65 | 3.80 | 5.75 | 4.10 | .... | 4.60 |
| ..... | 3.50 | 5.85 | 6.25 | 4.05 | 5.65 | 3.95 | .... | 5.25 |
| ..... | 3.65 | 3.85 | 5.20 | 3.40 | 5.50 | 3.95 | .... | 4.75 |
| ..... | 4.00 | 4.40 | 6.10 | 4.00 | 5.50 | 3.95 | 6.50 | 4.75 |
| ..... | 4.00 | 4.50 | 6.35 | 4.00 | 6.20 | 4.20 | 6.30 | 4.75 |
| ..... | 3.65 | 4.05 | 6.00 | 3.60 | 5.20 | 3.60 | 6.40 | 5.15 |
| Cold Rolled Strip | Cold Finished Bars | 1035-1050 | SAE Hot-rolled Bars (Unannealed) 2300 Series | 3100 Series | 4100 Series | 6100 Series | SAE Cold Drawn Bars 2300 | 3100 |
| ..... | 3.61 | 4.18 | 4.28 | 7.65 | 6.25 | 6.00 | 8.05 | 8.73 |
| ..... | 3.66 | 4.14 | 4.14 | 7.50 | 6.10 | 5.85 | .... | 7.33 |
| ..... | 3.66 | 4.06 | 3.85 | 7.46 | 6.06 | 5.81 | 8.71 | 7.29 |
| ..... | ..... | 4.10 | 3.95 | .... | .... | .... | .... | .... |
| ..... | ..... | 4.20 | .... | .... | .... | .... | .... | .... |
| ..... | 3.57 | 3.80 | 3.80 | 7.25 | 5.85 | 5.60 | 7.65 | 8.25 |
| ..... | 3.35 | 3.70 | 3.80 | 7.35 | 5.95 | 5.70 | 7.75 | 8.35 |
| ..... | 3.35 | 3.80 | 3.70 | 7.45 | 6.05 | 6.05 | 7.85 | 8.25 |
| ..... | 3.55 | 3.85 | 3.58 | 7.57 | 6.17 | 5.92 | 7.39 | 8.55 |
| ..... | 3.60 | 4.05 | 3.90 | 7.59 | 6.19 | 5.94 | 8.99 | 8.60 |
| ..... | 3.65 | 3.75 | 3.80 | 7.25 | 5.85 | 5.60 | 7.65 | 8.25 |
| ..... | ..... | 4.39 | 4.00 | 7.60 | 6.20 | 8.79 | 9.34 | 8.94 |
| ..... | ..... | 3.93 | 3.93 | 7.48 | 6.08 | 5.83 | 7.88 | 8.48 |
| ..... | 3.76 | 4.02 | 3.92 | 7.62 | 6.22 | 5.97 | 8.02 | 8.62 |
| ..... | 4.46 | 4.60 | .... | .... | .... | .... | .... | 7.22 |
| ..... | ..... | 4.36 | .... | .... | .... | .... | .... | .... |
| ..... | ..... | 4.44 | .... | .... | .... | .... | .... | .... |
| ..... | ..... | 4.84 | .... | .... | .... | .... | .... | .... |
| ..... | ..... | 4.48 | .... | .... | .... | .... | .... | .... |
| ..... | 5.00 | 5.10 | .... | .... | .... | .... | .... | .... |
| ..... | ..... | 5.60 | 5.65 | .... | 7.80 | 7.65 | 8.45 | .... |
| ..... | ..... | 5.60 | 6.10 | 9.00 | 8.00 | 7.85 | 8.70 | .... |
| ..... | 4.45 | 6.00 | 4.65 | 9.40 | 8.55 | 8.40 | 8.05 | 9.56 |
| ..... | *9.30 | 6.55 | 5.20 | 9.65 | 8.80 | 8.65 | 9.30 | 9.80 |

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, May 18

f. o. b. Port of Dispatch—

Domestic Prices at Works or Furnace—

By Cable or Radio

Last Reported

| Continental Channel or North Sea ports, gross tons | | | | £ s d | | French Francs | | Belgian Francs | | Reich Mark | |
|--|------------------------------------|----------------------------------|---|-------|---------------|----------------|------------|----------------|--------|------------|-------|
| British gross tons U. K. ports | Quoted in dollars at current value | **Quoted in gold pounds sterling | Fdy. pig iron, Si. 2.5 | £ s d | French Francs | Belgian Francs | Reich Mark | | | | |
| | | | Basic bess. pig iron.. | 21.65 | 4 12 6(a) | .... | .... | .... | 27.89 | (b) | 69.50 |
| | | | Furnace coke..... | 5.38 | 1 4 2 | 5.96 | 225 | 6.87 | 202 | 7.62 | 19 |
| \$23.40 | 5 0 0 | \$18.32 | Billets..... | 34.52 | 7 7 6 | 25.04 | 945 | 29.24 | 860 | 38.73 | 96.50 |
| | | | Standard rails..... | 1.99c | 9 10 0 | 1.56c | 1,300 | 2.06c | 1,375 | 2.38c | 132 |
| 26.91 | 5 15 0* | 17.15 | Merchant bars..... | 2.42c | 11 12 0†† | 1.44c | 1,202 | 1.65c | 1,100 | 1.98c | 110 |
| | | | Structural shapes... | 2.17c | 10 8 0†† | 1.41c | 1,173 | 1.65c | 1,100 | 1.93c | 107 |
| \$34.52 | 7 7 6 | \$38.34 | Plates, ½-in. or 5 mm..... | 2.29c | 10 19 3†† | 1.82c | 1,515 | 2.06c | 1,375 | 2.29c | 127 |
| 53.24 | 11 7 6 | 42.60 | Sheets, black..... | 3.08c | 14 15 0‡ | 2.17c | 1,805‡ | 2.36c | 1,575‡ | 2.59c | 144‡ |
| \$44 46 | 9 10 0 | \$48.99 | Sheets, galv., corr., 24 ga. or 0.5 mm..... | 3.61c | 17 5 0 | 3.30c | 2,750 | 4.13c | 2,750 | 6.66c | 370 |
| | | | Plain wire..... | 4.08c | 19 10 0 | 1.74c | 1,450 | 2.48c | 1,650 | 3.11c | 173 |
| 2.29c | 10 18 9 | 2.14c | Bands and strips... | 2.58c | 12 7 0†† | 1.61c | 1,340 | 1.95c | 1,300 | 2.29c | 127 |
| 2.72c | 13 0 0 | 2.95c | | | | | | | | | |
| 3.29c | 15 15 0 | 3.52c | | | | | | | | | |
| 2.77c | 13 5 0 | 1.95c | | | | | | | | | |
| 4.08c | 19 10 0 | 2.33c | | | | | | | | | |
| 4.86c | 23 5 0 | 2.99c | | | | | | | | | |
| | | 2.66c | | | | | | | | | |
| | | 2.85c | | | | | | | | | |

*Basic. †British ship-plates. Continental, bridge plates. ‡24 ga. †1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel.

(a) del. Middlesbrough. 5s rebate to approved customers. (b) hematite. °Close annealed

*Basic. †British ship-plates. Continental, bridge plates. ‡24 ga. †1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. (a) del. Middlebrough. 5s rebate to approved customers. (b) hematite. °Close annealed ††Rebate of 15s on certain conditions.

**Gold pound sterling carries a premium of 75 per cent over paper sterling.

se \$80.00 delivered Atlantic seaboard duty-paid.

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; † indicates by

HEAVY MELTING STEEL

| | |
|-------------------------|-------------|
| Birmingham, No. 1. | †12.00 |
| Bos. dock No. 1 exp. | 13.75-14.00 |
| New Eng. del. No. 1 | 14.00 |
| Buffalo, No. 1, R. R. | 13.50-14.00 |
| Buffalo, No. 1 | 13.00-13.50 |
| Buffalo, No. 2 | 11.00-11.50 |
| Chicago, No. 1 | 12.50-13.00 |
| Chicago, auto, no alloy | 11.25-11.75 |
| Chicago, No. 2 auto | 10.00-10.50 |
| Cincinnati, dealers | 10.50-11.00 |
| Cleveland, No. 1 | 13.00-13.50 |
| Cleveland, No. 2 | 12.00-12.50 |
| Detroit, No. 1 | 9.00-9.50 |
| Detroit, No. 2 | 8.50-9.00 |
| Eastern Pa., No. 1 | 15.00-15.50 |
| Eastern Pa., No. 2 | 12.50-13.00 |
| Federal, Ill. | 11.50-12.00 |
| Granite City, R. R. | 11.50-12.00 |
| Granite City, No. 2 | 10.50-11.00 |
| Los Angeles, No. 1 | 12.50-13.50 |
| Los Angeles, No. 2 | 11.00-11.50 |
| N. Y. dock No. 1 exp. | 12.00-12.50 |
| Pitts., No. 1 (R. R.) | 15.50-16.00 |
| Pittsburgh, No. 1 | 14.00-14.50 |
| Pittsburgh, No. 2 | 13.00-13.50 |
| St. Louis, R. R. | 12.00-12.50 |
| St. Louis, No. 2 | 10.50-11.00 |
| San Francisco, No. 1 | 13.00-13.50 |
| Seattle, No. 1 | 11.00-12.00 |
| Toronto, dlrs. No. 1 | 9.75-10.25 |
| Valleys, No. 1 | 14.00-14.50 |

COMPRESSED SHEETS

| | |
|---------------------|-------------|
| Buffalo | 11.00-11.50 |
| Chicago, factory | 11.75-12.25 |
| Chicago, dealer | 10.50-11.00 |
| Cincinnati, dealers | 10.00-10.50 |
| Cleveland | 12.25-12.75 |
| Detroit | 10.25-10.75 |
| E. Pa., new mat. | 15.00-15.50 |
| E. Pa., old mat. | 11.00-11.50 |
| Los Angeles | 12.50-13.00 |
| Pittsburgh | 14.00-14.50 |
| St. Louis | 9.50-10.00 |
| Valleys | 13.50-14.00 |

BUNDLED SHEETS

| | |
|------------------|-------------|
| Buffalo, No. 1 | 11.00-11.50 |
| Buffalo, No. 2 | 10.00-10.50 |
| Cleveland | 9.50-10.00 |
| Los Angeles | 14.00 |
| Pittsburgh | 13.00-13.50 |
| St. Louis | 7.00-7.50 |
| Toronto, dealers | 8.25 |

SHEET CLIPPINGS, LOOSE

| | |
|---------------------|-----------|
| Chicago | 8.00-8.50 |
| Cincinnati, dealers | 6.00-6.50 |
| Detroit | 7.00-7.50 |
| Los Angeles | 3.75-4.00 |
| St. Louis | 6.00-6.50 |

BUSHELING

| | |
|-----------------------|-------------|
| Buffalo, No. 1 | 11.00-11.50 |
| Chicago, No. 1 | 11.25-11.75 |
| Cincin., No. 1, deal. | 7.00-7.50 |
| Cincinnati, No. 2 | 1.75-2.25 |
| Cleveland, No. 2 | 7.50-8.00 |
| Detroit, No. 1, new | 9.50-10.00 |
| Valleys, new, No. 1 | 13.25-13.75 |
| Toronto, dealers | 4.25-4.75 |

MACHINE TURNINGS (Long)

| | |
|---------------------|------------|
| Birmingham | †4.50-5.00 |
| Buffalo | 6.00-6.50 |
| Chicago | 6.50-7.00 |
| Cincinnati, dealers | 4.00-4.50 |
| Cleveland | 7.00-7.50 |

| | |
|------------------|------------|
| Detroit | 4.25-4.75 |
| Eastern Pa. | 8.50 |
| Los Angeles | 4.50-5.00 |
| New York | †3.50-4.00 |
| Pittsburgh | 8.00-8.50 |
| St. Louis | 3.50-4.00 |
| Toronto, dealers | 4.25-4.75 |
| Valleys | 8.50-9.00 |

SHOVELING TURNINGS

| | |
|--------------------|------------|
| Buffalo | 7.25-7.75 |
| Cleveland | 7.50-8.00 |
| Chicago | 7.50-8.00 |
| Detroit | 5.50-6.00 |
| Pitts., alloy-free | 9.50-10.00 |

BORINGS AND TURNINGS

For Blast Furnace Use

| | |
|---------------------|------------|
| Boston district | 2.00 |
| Buffalo | 6.75-7.25 |
| Cincinnati, dealers | 2.75-3.25 |
| Cleveland | 7.50-8.00 |
| Eastern Pa. | 6.50-7.00 |
| Detroit | 4.75-5.25 |
| New York | †2.50-3.00 |
| Pittsburgh | 7.50-8.00 |
| Toronto, dealers | 5.25-5.75 |

AXLE TURNINGS

| | |
|-----------------------|-------------|
| Boston district | †7.50 |
| Buffalo | 9.50-10.00 |
| Chicago, elec. fur. | 12.50-13.00 |
| East. Pa., elec. fur. | 13.00-13.50 |
| St. Louis | 9.00-9.50 |
| Toronto | 4.50-4.75 |

CAST IRON BORINGS

| | |
|---------------------|-------------|
| Birmingham | †6.00-6.50 |
| Boston dist. chem. | †4.50 |
| Buffalo | 6.75-7.25 |
| Chicago | 5.50-6.00 |
| Cincinnati, dealers | 2.75-3.25 |
| Cleveland | 7.50-8.00 |
| Detroit | 4.75-5.25 |
| E. Pa., chemical | 10.00-11.00 |
| New York | †3.50-4.00 |
| St. Louis | 2.50-3.00 |
| Toronto, dealers | 4.25-4.75 |

RAILROAD SPECIALTIES

| | |
|---------|-------------|
| Chicago | 14.50-15.00 |
|---------|-------------|

ANGLE BARS—STEEL

| | |
|-----------|-------------|
| Chicago | 15.00-15.50 |
| St. Louis | 13.00-13.50 |

SPRINGS

| | |
|---------------|-------------|
| Buffalo | 15.50-16.00 |
| Chicago, coil | 15.50-16.00 |
| Chicago, leaf | 14.50-15.00 |
| Eastern Pa. | 17.00-17.50 |
| Pittsburgh | 17.00-17.50 |
| St. Louis | 14.00-14.50 |

STEEL RAILS, SHORT

| | |
|-------------------------|--------------|
| Birmingham | †12.00-12.50 |
| Buffalo | 16.50-17.00 |
| Chicago (3 ft.) | 15.50-16.00 |
| Chicago (2 ft.) | 16.00-16.50 |
| Cincinnati, dealers | 16.25-16.75 |
| Detroit | 16.00-16.50 |
| Los Angeles | 15.00-15.50 |
| Pitts., 3 ft. and less | 18.00-18.50 |
| St. Louis, 2 ft. & less | 16.25-16.75 |

STEEL RAILS, SCRAP

| | |
|-----------------|--------------|
| Boston district | †13.50-14.00 |
| Buffalo | 15.50-16.00 |
| Chicago | 13.00-13.50 |
| Cleveland | 16.00-16.50 |

| | |
|------------|-------------|
| Pittsburgh | 15.50-16.00 |
| St. Louis | 13.00-13.50 |
| Seattle | 16.00 |

FROGS, SWITCHES

| | |
|----------------|-------------|
| Chicago | 12.50-13.00 |
| St. Louis, cut | 13.00-13.50 |

ARCH BARS, TRANSOMS

| | |
|-----------|-------------|
| St. Louis | 13.50-14.00 |
|-----------|-------------|

PIPE AND FLUES

| | |
|---------------------|-----------|
| Chicago, net | 7.50-8.00 |
| Cincinnati, dealers | 6.00-6.50 |

RAILROAD GRATE BARS

| | |
|---------------------|------------|
| Buffalo | 9.00-9.50 |
| Chicago, net | 7.50-8.00 |
| Cincinnati, dealers | 5.75-6.25 |
| Eastern Pa. | 12.50 |
| New York | †8.50-9.00 |
| St. Louis | 8.00-8.50 |

RAILROAD WROUGHT

| | |
|--------------------|--------------|
| Birmingham | †11.00-11.50 |
| Boston district | †9.50-10.00 |
| Eastern Pa., No. 1 | 16.00-16.50 |
| St. Louis, No. 1 | 9.75-10.25 |
| St. Louis, No. 2 | 11.50-12.00 |

FORGE FLASHINGS

| | |
|-----------------|-------------|
| Boston district | †7.50-8.00 |
| Buffalo | 11.00-11.50 |
| Cleveland | 11.00-11.50 |
| Detroit | 8.50-9.00 |
| Los Angeles | 9.00 |
| Pittsburgh | 13.50-14.00 |

FORGE SCRAP

| | |
|-----------------|-------------|
| Boston district | †6.50 |
| Chicago, heavy | 15.50-16.00 |

LOW PHOSPHORUS

| | |
|-----------------------------------|-------------|
| Buffalo, crops | 16.50-17.00 |
| Cleveland, crops | 17.50-18.00 |
| Eastern Pa., crops | 17.00-17.50 |
| Pitts., billet, bloom, slab crops | 18.00-18.50 |

LOW PHOS. PUNCHINGS

| | |
|--------------------|-------------|
| Buffalo | 15.50-16.00 |
| Chicago | 15.50-16.00 |
| Eastern Pa., crops | 17.50-18.00 |
| Pittsburgh | 17.00-17.50 |
| Seattle | 15.00 |

RAILS FOR ROLLING

5 feet and over

| | |
|-------------|--------------|
| Birmingham | †14.00-15.00 |
| Boston | 15.00-15.50 |
| Chicago | 17.00-17.50 |
| New York | †14.00-14.50 |
| Eastern Pa. | 17.00-17.50 |
| St. Louis | 16.00-16.50 |

STEEL CAR AXLES

| | |
|-----------------|--------------|
| Birmingham | †15.00-16.00 |
| Buffalo | 16.00-16.50 |
| Boston district | †15.00 |
| Chicago, net | 17.50-18.00 |
| Eastern Pa. | 20.50-21.00 |
| St. Louis | 17.00-17.50 |

LOCOMOTIVE TIRES

| | |
|------------------|-------------|
| Chicago (cut) | 15.00-15.50 |
| St. Louis, No. 1 | 12.25-12.75 |

SHAFTING

| | |
|-----------------|--------------|
| Boston district | †15.25-15.50 |
|-----------------|--------------|

| | |
|--------------|-------------|
| New York | 15.50-16.00 |
| Eastern Pa. | 13.00-13.50 |
| St. Louis, 1 | 16.00 |

CAR WHEELS

| | |
|----------------|-------------|
| Birmingham | 12.50-13.00 |
| Boston dist. | 13.00-13.50 |
| Buffalo, steel | |
| Chicago, iron | |
| Chicago, rol. | |
| Cincin., iron | |
| Eastern Pa. | |
| Eastern Pa. | |
| Pittsburgh | |
| Pittsburgh | |
| St. Louis, 1 | |
| St. Louis, 1 | |

NO. 1 CAST

| | |
|---------------|--|
| Birmingham | |
| Boston, No. | |
| N. Eng. del. | |
| N. Eng. del. | |
| Buffalo, cup | |
| Buffalo, mac | |
| Chicago, ag | |
| Chicago, au | |
| Chicago, rail | |
| Chicago, ma | |
| Cincin., mac | |
| Cleveland, p | |
| Eastern Pa. | |
| E. Pa., mix | |
| Los Angeles | |
| Pittsburgh, s | |
| San Francis | |
| Seattle | |
| St. Louis, cu | |
| St. Louis, ag | |
| St. L., No. 1 | |
| Toronto, No | |
| mach., ne | |

HEAVY CAS

| | |
|---------------|--|
| Boston dist. | |
| New Englan | |
| Buffalo, bre | |
| Cleveland, br | |
| Detroit, auto | |
| Detroit, bre | |
| Eastern Pa. | |
| Los Ang., at | |
| New York | |
| Pittsburgh, p | |

STOVE PLAT

| | |
|---------------|--|
| Birmingham | |
| Boston distri | |
| Buffalo | |
| Chicago, net | |
| Cincinnati, d | |
| Detroit, net | |
| Eastern Pa. | |
| New York | |
| St. Louis | |
| Toronto deal | |

MALLEABLE

| | |
|---------------|--|
| Birmingham | |
| New Englan | |
| Buffalo | |
| Chicago, R. I | |
| Cincin., agri | |
| Cleveland, p | |
| Eastern Pa. | |
| Los Angeles | |
| Pittsburgh, r | |
| St. Louis, R | |

Iron Ore

Lake Superior Ore

Gross ton, 51½%

Lower Lake Ports

| | |
|-----------------------|--------|
| Old range bessemer | \$5.25 |
| Mesabi nonbessemer | 4.95 |
| High phosphorus | 4.85 |
| Mesabi bessemer | 5.10 |
| Old range nonbessemer | 5.10 |

| | | |
|---------------------------------|-----------|--|
| Eastern Local Ore | | |
| <i>Cents, unit, del. E. Pa.</i> | | |
| Foundry and basic | | |
| 56.63% con. | 9.00-9.25 | |
| Cop.-free low phos. | | |
| 58-60% | nominal | |

| | | |
|--|-------|--|
| Foreign Ore | | |
| <i>Cents per unit, c.i.f. Atlantic</i> | | |
| Foreign manganiferous ore, 45.55% iron, 6-10% man. | | |
| nom. | 12.00 | |

| | |
|--|---------------|
| No. Afr. low phos. | 12.00 |
| Swedish low phos. | 12.00 |
| Spanish No. Africa basic, 50 to 60% nom. | 10.00-10.50 |
| Tungsten. sh. ton. unit, duty pd. nom. | 19.00-19.50 |
| N. F., fdy., 55% | 7.00 |
| Chrome ore, 48% gross ton, c.i.f. | \$23.00-24.00 |
| Molybdenum ores sulphide, per lb. | |

| | |
|------------------------|--|
| molybdenum tained, f.o | |
|------------------------|--|

Manganese

| | |
|------------------------|--|
| Prices not in per unit | |
| Caucasian, nom. | |
| So. African, nom. | |
| Indian, 49-50 | |

Strip

Prices, Pages 82, 83

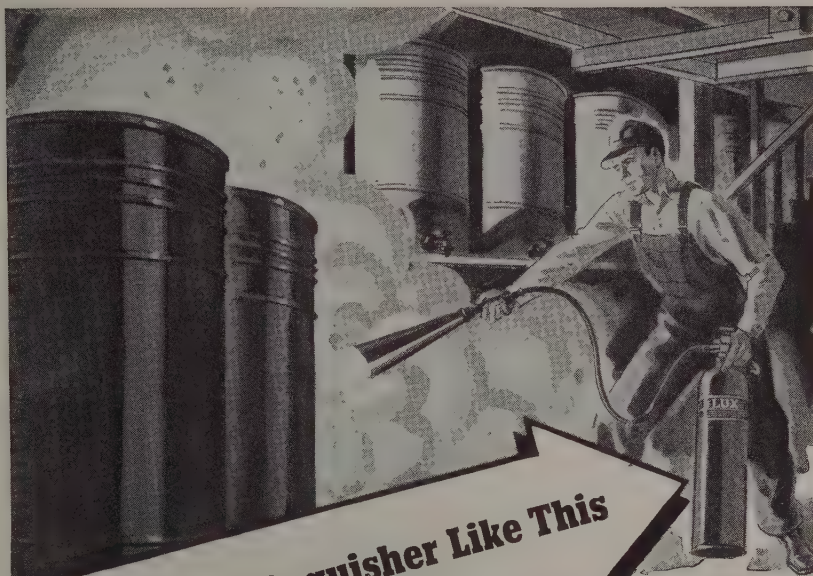
Steps to quell price and strip was too the placing of heavy concessions generally a ton off base fig- prices universally ent and third quar- esent reductions of ot and cold-rolled t strip, low-carbon commodity strip. are unchanged, but ions, formerly as n, have been elimi- vity of automotive spread over an ex- avier backlogs have ed immediately in anized sheet prices d in recent mill an- t have been weak, down to 56 per cent. cal sheet and strip ally took advantage oncessions to cover ately ahead, some h quarter. Ton- were fairly heavy e gate. Business nce the withdraw- on hot and cold- strip and is ex- nue slow pending aterial now on or- s on hot and cold- 3 a ton below levels e the wave of cut- ty deductions elimi- ed sheet prices still

low-carbon cold-rolled et at 3.00c, Worces- ird quarter, with uctions eliminated. arbon strip are un- age at recent low ed, although some uying was done.

Sheet prices have ers now show little ng substantial cov- d cold-rolled sheets oncessions recently. little buying activity he remainder of the ice sales of galvan- o were made here, quiet market is ex- present. Enameling ain specialties like- temporarily, al- e same extent as in grades.

the cold strip trade eared with the re- ton on low-carbon aterial and elim- ty deductions. While as driven in during

ARM AGAINST FIRE—



with An Extinguisher Like This

BRACKETED on the walls beside the vital processes of industry is where you find Lux extinguishers. Or, if the fire hazard is acute, a Lux Built-in System stands guard.

Industry selects Lux protection for the excellent reason that Lux is the kind of fire-fighter industry needs.

Lux uses the fastest known extinguishing agent, carbon dioxide snow-and-gas. (Industry wants its fires out fast!) Lux gas is harmless to men, materials. (Industry avoids damage, injury.) Lux gas is clean, dry. (Industry keeps production rolling without interruptions for unnecessary clean-ups.) Industry chooses Lux.

If you want fast-moving, sure-handed fire protection, you'll want to know the facts about Lux extinguishing equipment. Send the coupon below. Mail it today.



Walter Kidde & Company

532 West Street, Bloomfield, N. J.

Send me information about Lux fire protection.

Name.....

Company.....

Address.....

the period of price weakness, volume was not nearly as heavy as in the midwest. High-carbon cold-strip prices for third quarter are unchanged. Household appliance users continue to buy in fair volume. Operations in the East average 50 per cent.

Philadelphia—The market appears steadier but is provided little test, since heavy tonnages already have been placed during the period of price cutting. It is estimated most consumers are covered at least through third quarter. Consumers are required to take out low-price

tonnage before June 30 but mills reserve the right to ship at their convenience after this deadline. Galvanized sheets still are reported weak. According to reliable reports, Great Britain has distributed orders for 100,000 tons of 14 gage galvanized corrugated sheets in this country, 40,000 tons to the leading producer and the balance divided among other interests.

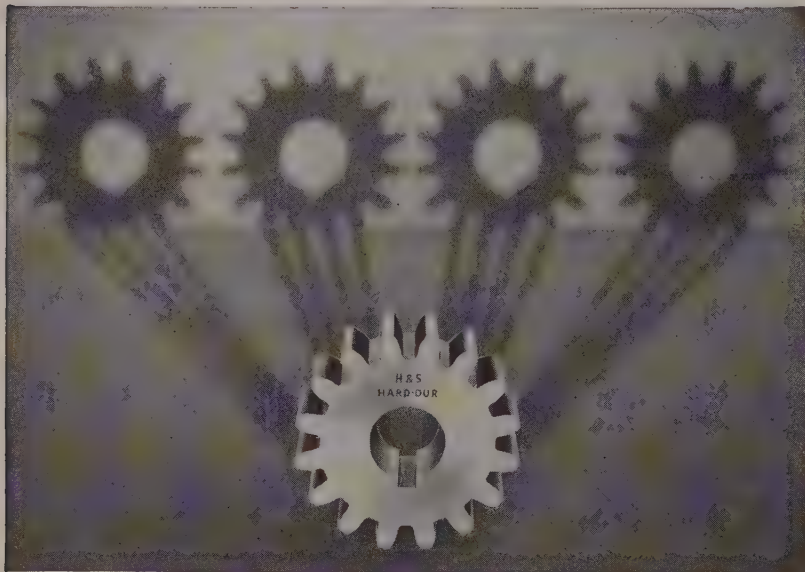
Buffalo—Sheet and strip production is being aided by heavier orders booked at recent price concessions. Some apprehension still is felt over prices, but the market is given little

test on hot and cold sheet quotation shaded.

Cincinnati — Mill lower base prices efforts elsewhere to concessions. Book reflecting tonnage quotations. Some done for 1939 model well as 1940 model.

St. Louis — A nage of sheets and at price concessions were restored previous levels, since has been slow galvanized sheets is disappointing.

Birmingham, Ala. tinue at about 65 p sheets lead, although paratively satisfactory manufacturers' share crease has been no cotton ties.



4 TIMES THE LIFE *at only 50 per cent extra . . .*

"HARD-DUR" Gears preserve the tooth form. They are made only of the finest gear steels and are scientifically heat treated to obtain the maximum physical properties. They are so much stronger, harder and more wear-resistant than similar untreated gears that they are guaranteed to have four to five times the life at only 50 per cent extra in cost. "HARD-DUR" Gears handle the tough jobs on which ordinary gears fail and when used on the average job they last almost indefinitely. A trial will prove their superiority and economy.

A valuable 448 page Gear book will be sent on request.

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 HAMILTON AVENUE, CLEVELAND, OHIO, U. S. A.

Plates

Plate Prices

Boston—Weakness more has prevailed in New England so in numerous instances concerned over of quotations reflected Boston, the figure third quarter. At prices have failed beyond immediate

New York—Reaffirmed 2.10c base on plates later induced some average at concession ton. Lower prices appeared now. C supposedly is to be end of this quarter, tial new shipwork pect, while resumptions at certain rail were idle during suspension also aid.

Philadelphia — Pr in plates has mod the move to stabilizations, and buying is Mill backlogs have ly due to a sharp in from makers of oi Substantial ship r pected about June business now is b 2.10c, Claymont. C are available only w in transit is invol has been confined plates which may b tinuous mills.

Birmingham, Ala. somewhat better de

of especial signifi-
Activity in plates
and awards and in-
d to lots under 100
s year 16,480 tons
d, compared with
corresponding pe-

ts Placed

erel oil tank, Petrol
a, to Chicago Bridge
go.
Standard Oil Co. of
to Chicago Bridge &

ts Pending

300,000-gallon tank,
ashington.

es, Page 82

t-rolled carbon bars
d \$2 a ton to 2.15c,
d by elimination of
s formerly ranging
lots of 75 tons and
s a saving to small
t an increase of \$1
orders. Hot-rolled
ise have been low-
quotations. The base
carbon and alloy
reduced \$1 a ton,
ty deduction has
\$2 a ton on 20 tons
eduction applies on
h 5 to 10 tons con-
e base price. Quan-
changed except for
\$2.50 to \$3 per 100
of less than 300

ce few bar consum-
usly had been or-
tonnage to earn
quantity deduction,
ese discounts and
a ton in the base
t price to most buy-
onage purchasers
resents an advance
Orders show little
age is a trifle heav-
ago.

steel merchant bar
on bar prices have
reduction in billet
quotations. Quan-
on rail steel mate-
eliminated, with the
uing to apply on
and over. Business
avier.

users here will be
net increase* of \$1
olled carbon bars.
ers, on the other

hand, benefit from elimination of
quantity deductions and reduction
of \$2 in base price. Cold-finished
bar prices have been adjusted some-
what similarly and warehouse quo-
tations also will be revised. Busi-
ness is fairly steady.

New York—Hot-rolled bar de-
mand was stimulated slightly by re-
cent revisions in base prices and
quantity deductions. This was more
noticeable among jobbers than
manufacturing consumers. How-
ever, net changes in prices were too
small to bring out large orders.
Buyers who placed orders prior to

changes in schedules but who have
not received delivery benefit by
whatever revisions may accrue.

Philadelphia—Demand shows little
pickup, although forging shops and
warehouses are slightly heavier
buyers. Hot-rolled alloy and cold-
finished bars continue to move bet-
ter than carbon grades.

Birmingham, Ala. — Demand for
bars is bolstered mainly by concrete
reinforcing bars with disappoint-
ment over needs of agricultural im-
plement makers. Connor Steel Co.,
Birmingham, has booked 2100 tons
of reinforcing bars for a New Or-



To Tame Friction STEEL PICKS PENOLA

Friction is one of the steel man's
biggest headaches...unless he pro-
vides adequate protection for his
costly reduction gears and roll
neck bearings. 80% of America's
4-high mills find top protection in
Penola!

When bearings costing thousands
of dollars, must withstand crushing
pressures up to 5,000,000 pounds
per bearing...just any lubricant

won't do! Penola can and does
meet every grueling mill test, day
in and day out! That's why Penola
makes and sells more steel mill
lubricants than any other maker in
the world. Protect...with Penola!

PENOLA LUBRICANTS

Penola Inc., Pittsburgh, Pa.
(Formerly Pennsylvania Lubricating Co.)
New York • Chicago • Detroit • St. Louis

LUBRICANTS FOR THE STEEL INDUSTRY SINCE 1885

leans housing project.

Buffalo—Demand is slightly heavier, with automotive orders showing signs of expanding. However, substantial buying for 1940 models still is awaited. Inquiries from airplane manufacturers for special alloys are heavier.

Pipe

Pipe Prices, Page 83

Pittsburgh—Pipe demand is slightly heavier. Demoralization of the

automotive sheet market has brought pressure on mechanical tubing sellers, but volume for the latter has been small and it has not been necessary to reduce prices. Weakness continues in the secondary market for standard pipe.

Cleveland—Pipe was not affected by recent unsettlement in steel prices. Standard pipe shipments are well sustained, and while changes since a month ago are slight, increased movement compared with last year reflects improved building activity. A less favorable comparison between the two years is shown

in oil country good news is confined to gathering lines.

New York—Action on the largest contracts pending for jobs and other business. Meanwhile, little in the way of new business, with current activity principally to small.

Birmingham, Ala.—Inquiries are developing, although somewhat comparative small. Inquiries are developing, although somewhat comparative small. Inquiries are developing, although somewhat comparative small.

Seattle—The market with no large tonnage. Bremerton, Wash., winning a \$200,000 contract and a \$60,000 contract. Baar & Cunningham engineers, will open a water system equipment company in Skamania, Oreg.

San Francisco—The market for pipe award of size. States Pipe & Foundry Co. for the nation at Boulder City, Nev., totaling 401 tons, bringing aggregate to 10,459 tons with 10,566 tons for a year ago.

Cast Pipe Place

303 tons, national partnership, City, Nev., to United States Foundry Co., Burlington, Wash., reported to Iron Pipe Co., Providence, R.I.

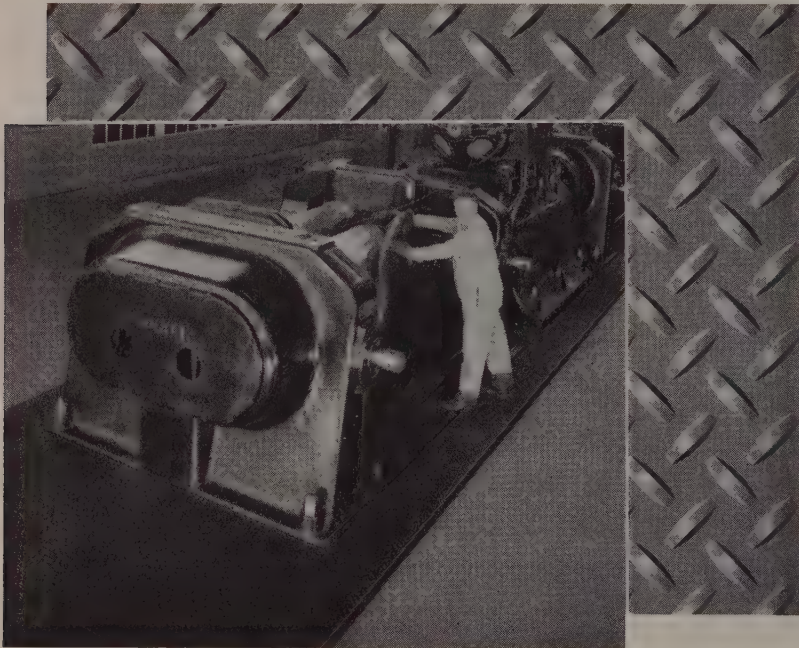
Cast Pipe Pencil

1100 tons, 2 to 16-inch, bids opened.
700 tons, 12-inch, Los Angeles, Cast Iron Pipe Co., low bidder.
325 tons, 2 to 8-inch, Eugene, Oreg.; H. G. United States Pipe & Foundry Co., low bidder.
240 tons, 6-inch, Spokane, bids opened.
290 tons, 4 to 10-inch, bids opened.
190 tons, treasury department, cisco, invitation 74, purchased asbestos cement pipe.
190 tons, or alternate, land, Wash., Light & Unstated tonnage, new Yakima, Wash., \$77, May 22.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet

Announcement of bolt, nut and rivet prices following recent period. Demand is with gains over A



Ford Uses Inland Floor Plate

Ford plants, noted for their safety and efficiency, as well as for good industrial housekeeping, demonstrate many of the important uses of Inland 4-Way Floor Plate . . . for aisles, platforms, all-steel stairs, areas around heavy machinery, etc.

The above picture shows Inland 4-Way Floor Plate installed around rubber mills machines in the Ford Tire plant at Dearborn. Its safe foot traction prevents accidents; it is easily kept clean and withstands hard wear and heavy loads year after year without repair.

Order from your Jobber or write for 16-page Floor Plate Booklet

INLAND STEEL CO.

38 SOUTH DEARBORN STREET, CHICAGO

Sheets • Strip • Tin Plate • Bars • Plates • Structural • Piling • Rails • Reinforcing Bars

ber buying is light-
ive needs are low.
for 1940 model cars
Farm equipment
e sustained.

that sheet and strip weakness might
influence the former. With this re-
affirmation specifications are expect-
ed to continue recent gains, possibly
reaching a peak in June. Produc-
tion holds at 70 per cent.

lowing settlement of the coal strike.
This results in better specifications
for steel.

Equipment buying is light. Union
Pacific Railroad has placed 10 ca-
booses with Greenville Steel Car Co.,
Greenville, Pa., and General Chemi-
cal Co. is inquiring for 10 hopper
cars. Pittsburgh & Lake Erie is ex-
pected to place 5000 tons of rails.
Akron, Canton & Youngstown is in-
quiring for two mikado locomotives.

Rails, Cars

Track Material Prices, Page 83

Railroad activity is restricted ex-
cept for some improvement in car
repair work in eastern plants, fol-

Car Orders Placed

Union Railroad, 10 cabooses, to Green-

ices, Page 83

ire and rod prices
ed. Some weakness
merchant products, al-
ot unusual. Volume
at and the outlook
promising since a
atural market is in
minor weakness has
manufacturers' wire

her producers have
ed of American Steel
reaffirming current
hot-rolled rods and
quarter. Quotations
been steady, with de-
by early needs of
business in manufac-
a trifle heavier, but
generally is little
few weeks ago.

and wire prices, re-
third quarter, con-
\$2 higher differen-
ster base. Demand
and about maintained
spread as to prod-
all business is for
and some specialties
ntly pressed to meet

Finishing opera-
te 50 per cent of ca-
dules are uneven.

reaffirming of wire
third quarter has had
buying which has
recent weeks. Price
ne products did not
goods. Rod demand
users keeping inven-
unmanufacturers' wire is
well, buyers specifi-
in small lots for

y. Spring wire is
ulture trade demand
gh little volume is
n the automotive in-
as improved slightly
mining trade. Build-
electrical wire prices
Operations in the
d 50 per cent.

Ala.—Wire products
ed out at about 60
most demand is di-
mer use.

cte

Prices, Page 82

es have been extend-
quarter, ending fears



**FOR MODERN MULES
OF CONSTRUCTION**

Forgings... Play a vital part in the tough tasks
put to modern tractors... Construction men de-
mand the best in quality forgings... but costs
must be reasonable... Another reason many
leading tractor builders prefer to use Erie Steam
and Board Drop Hammers and Erie Trimming
Presses... Erie's 36 years experience in designing
and building gives you hammers that will turn
out lower cost forgings... Write for your copy of
Bulletin 325 Steam Drop Hammers, 328 Board
Drop Hammers and 250 Erie Trimming Presses.

ERIE FOUNDRY CO.
ERIE, PENNSYLVANIA, U. S. A.

| | | |
|------------------|-------------------------------|-------------------------------|
| DETROIT | CHICAGO | INDIANAPOLIS |
| 335 Curris Bldg. | 549 Washington Blvd. | 335 Postal Station Bldg. |
| FRANCE | CANADA | ENGLAND |
| Fenwick, S. A. | John Bertram & Sons Co., Ltd. | Burton, Griffiths & Co., Ltd. |

ERIE BUILDS Dependable HAMMERS

ville Steel Car Co., Greenville, Pa.

Car Orders Pending

General Chemical Co., five or 10 hopper cars, 50 or 70-ton capacity; bids asked.

Locomotives Pending

Akron, Canton & Youngstown, two minkado type; bids asked.

Buses Booked

A. C. F. Motors Co., New York: Six 37-passenger for Southeastern Greyhound

Lines, Lexington, Ky.; six 28-passenger for Conestoga Transportation Co., Lancaster, Pa.; four 33-passenger for Georgia Power Co., Atlanta, Ga.

Twin Coach Co., Kent, O.: Twenty-four 40-passenger for North Shore Bus Co., Flushing, L. I.; twenty-eight 21-passenger for Duluth-Superior Transit Co., Duluth; eight 31-passenger for British Columbia Electric Railway Co., Vancouver, B. C.

C. & G. Foundry & Pattern Works, Indianapolis, has moved its plant to 2440 Yandes street, where a new building has been erected to consolidate the company's branches.

Shapes

Structural Shape Pr

Pittsburgh—Fair vate work is develop, well take the burden from public projects mer, when the bulk has been placed. P been relatively slow, large total tonnage in effects are being felt tural mills have been ily and are not unde the retrenchment no other markets.

Chicago—Demand tained, with substan still pending, many of cent inquiries. Some gest demand has l awards are rather high quires are somewhat cluding 2410 tons for the Rock Island re Blue Island, Ill.

Boston—Except for quires for I-beam spans, activity is light aggregating 2800 tons Providence, R. I., 150 out for estimates sho cial and industrial c sluggish and there is cate an early improve work. District fabr have small backlogs.

New York—Revised Battery-Brooklyn brid, mitted to the war d lowing rejection on posed span would be to navigation. The take close to 100,000

Philadelphia—Seve size jobs continue be but new work is no satisfactorily and this smaller backlogs am trict fabricators. Che ning addition to asse bert Kahn, Detroit, are are weak.

Buffalo—Volume of eased somewhat, how

DESIGNING • ENGINEERING • MANUFACTURING

DEEP DRAWN SHELLS AND SHAPES



RIGHT—Seamless shell drawn by Hackney

ABOVE—Diffuser tube deep-drawn seamless by Hackney for a large air conditioning company

RIGHT—Seamless tapered shell made from one continuous piece of steel without a joint of any kind

RIGHT—Condenser shells or liquid receivers are advantageously made by the Hackney process

Hackney MILWAUKEE

The Hackney Method Assures

UNIFORMITY—DEPENDABILITY—SATISFACTION

Manufacturing competence, designing skill and over thirty years of close co-operation with manufacturers and design engineers are your assurance of the satisfaction and economies obtained in the containers and special shapes produced by the Hackney method.

Cold drawing of seamless containers from metal plates was pioneered by the Pressed Steel Tank Company. Numerous metals have been used in developing Hackney containers in a wide variety of shapes for many industries. Hackney welding has won recognition for its superiority.

If you use or need metal shapes or shells, send the details and let Hackney engineers help solve your problems or make practical suggestions for improvements. There is no obligation.

PRESSED STEEL TANK COMPANY



208 S. La Salle St., Rm. 1211
CHICAGO

688 Roosevelt Building
LOS ANGELES

1387 Vanderbilt Concourse
NEW YORK

1461 So. 66th Street
MILWAUKEE

Containers for Gases, Liquids and Solids

Shape Awards C

Week ended May 20
Week ended May 13
Week ended May 6
This week, 1938
Weekly average, year
Weekly average, 1938
Weekly average, Apr
Total to date, 1938
Total to date, 1939
Includes awards of 100

several large projects. General contracts have been awarded and are expected to include the new Perry housing at Steel Co., Youngs- and 150 tons for the job, here.

Bids open June 7, for 840 for the building, for tunnel rib in Colorado, 3425 tons, only 535 tons, aggregate to date to be compared with 44,660

Structural Steel Co., New York.
170 tons, plant addition, Hankins Container Corp., Cleveland, to Ingalls Iron Works, Birmingham, Ala.
155 tons, women's dormitory, Oxford, O., to Ohio Structural Steel Co., Newton Falls, O.
150 tons, fat rendering plant, Wilson & Co., Philadelphia, to Hess Iron Works, Philadelphia.
125 tons, bridge, contract 1774, Fort Wayne, Ind., to Pan-American Bridge Co., New Castle, Ind.
120 tons, building addition, News Syndicate Co., Brooklyn, N. Y., to Lehigh Structural Steel Co., Allentown, Pa.
120 tons, three 300-foot radio towers, navy yard, Mare Island, Calif., to

Minneapolis-Moline Power Implement Co., Minneapolis.
115 tons, Middle river and Intra-coastal waterway bridges, Texas, to Nashville Bridge Co., Nashville, Tenn.
110 tons, auditorium, high school, Ventura, Calif., to Pennsylvania Iron & Steel Co.
100 tons, laundry building, Nashville, Tenn., to Nashville Bridge Co., Nashville.
100 tons, derrick framing, Narrows bridge, Tacoma, to Pacific Car & Foundry Co., Seattle.
100 tons, bridge, Berks county, Pennsylvania, to Bethlehem Steel Co., Bethlehem, Pa.; through Ritter Bros., Harrisburg, Pa.

Contracts Placed

to structural shop, to Belmont Iron Co., Ohio.

navy yard, Portsmouth-Pittsburgh-Des Moines, Pa.

addition, Indianapolis, to Austin Iron Co.,

plant, city of Minneapolis-Moline Power Co., Minneapolis.

Victor Chemical Co., Tenn., to Ingalls Iron Works, Birmingham.

Goodyear Tire & Rubber Co., to Burger Iron Co.,

Rednu Inc., New York, to Bridge Co., Pittsburgh.

facturing building, for Co., Woodstock, Ill., to Bethlehem Steel Co., Bethlehem, Pa.

nd platforms, Harlem, to Bethlehem Steel Co., Pa.

ges, Little Falls, N. J., to American Bridge Co.,

route 204, section 8, Pennsylvania, to Co., Pittsburgh.

bridge over Delaware, Western railroad, N. J., to American Bridge Co., Pittsburgh.

onway, pickling plant, Philadelphia, to Belmont Iron Co., Allentown, Pa.

railroad bridge, Brigh- American Bridge Co., Pitts-

erkeley street, Boston, American Bridge Co.,

AGM-195, Falls coun- Austin Bros., Dallas.

bridge, Goodale street, Bethlehem Steel Co.,

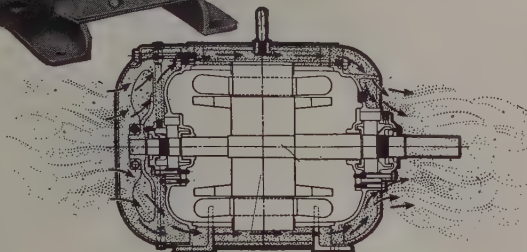
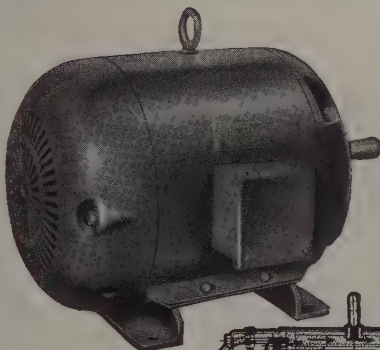
for American Vis- Co., W. Va., to Lehigh Co., Allentown, Pa.

over Spicket river, for city, to Phoenix Iron Co., Phoenix, Pa.

Twenty-sixth avenue, Brooklyn, to Harris Co., New York.

Shore Parkway con- Brooklyn, to Harris

Motor Protection Costs Less Than Motor Maintenance



WHERE DUST AND STEEL PARTICLES ARE PRESENT

A FEW OF THE MANY OUTSTANDING FEATURES OF WAGNER TYPE CP TOTALLY-ENCLOSED FAN-COOLED MOTORS

- Rugged, welded all-steel stator with specially impregnated windings.
- Dynamically-balanced cast rotor, equipped with sturdy shaft having end-milled keyways. Full-cartridge bearings completely sealed for protection.
- Easily accessible grease plugs on both ends of motor, permitting lubrication while running.

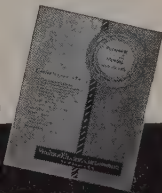
Abrasive dust is destructive to open type motors, but harmless where Wagner CP totally-enclosed, fan-cooled motors are installed. The Wagner CP motor has two frames, an outer frame which guides a strong cooling draft over the motor and an inner frame which completely seals the vital parts of the motor against the entrance of dust, filings, fumes, moisture, and other destructive agents.

Open type motors should not be expected to operate where such atmospheric conditions prevail. Standardize on Wagner CP motors and you will discover as other motor users have already discovered that *motor protection costs less than motor maintenance.*

WRITE FOR BULLETIN 182

A 70-page bulletin completely describing Wagner type CP totally-enclosed, fan-cooled motors and other types of polyphase motors will be sent upon request. You should have a copy.

M39-10



Wagner Electric Corporation

6400 Plymouth Avenue, Saint Louis, Mo., U.S.A.

MOTORS

TRANSFORMERS

FANS

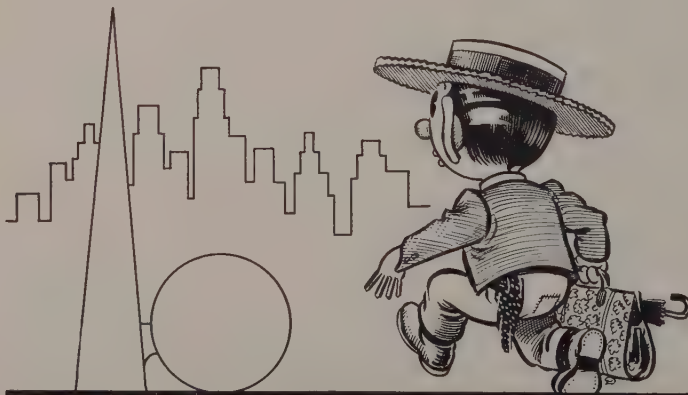
BRAKES

Behind the Scenes with STEEL

Mr. Shrdlu Goes To Town

Up from Gotham's stream-lined dump,
Where Whalen's boys have raised a clump
Of buildings, stages, tanks and trees,
There swells an advertising breeze:
By word of mouth and printer's ink
The copy writers make us blink
In wonder, awe, and glad surprise
At Grover's mighty enterprise.
Although we toil on Erie's shores
And, far from Gotham, do our chores
Behind the scenes, unsung, for STEEL,
"The Nation's Choice"—(a plug: our zeal
Absolves us when, from time to time,
We interrupt our corny rhyme)
Although, as said, we're only hicks,
And bravely toil among the sticks,
The ballyhoo from New York's Fair
Has reached at last to Shrdlu's lair.
This little lamb, this guileless wight,
This artless scribe is filled with fright.
"And why?" sez you. "Because," says he
"He's off for Gotham, F.O.B."
We contemplate with frenzied awe
The Fair that daily legions draw;
The trylon, art, and perisphere
Are things at which we'll shortly peer.
Tomorrow's world is there on view,
With Billy Rose's mermaid crew.
There's much to see, and miles to walk,
But Shrdlu's not the man to balk
At miles, and mobs, and scenes bizarre
Providing Whalen runs a bar.
We want to see that wicked prance
That's advertised as Harlem's dance;
We want to rumple up our hair
And really "do" the New York Fair—
And if you haven't had a peek,
We'll tell you all, this time next week.

SHRDLU



—The Market

100 tons, building, Lehman Co., Allentown.
Structural Steel Co. through Turner Const. York.
Unstated, 48 overhead doors for Fort Lewis & Co., Seattle.

Shape Contracts

4000 tons, new convent, W. F. Hendrich Co.
3049 tons, including 79 ing, Ballard bridge, Iron Works, Seattle, for sub-contract for steel.
2600 tons, steel sheet, control projects, Springfield, East Hartford, Conn.
2800 tons, grandstand, club grandstand, association, Lenox, Mass.
2410 tons, viaduct over tracks, Burr Oak, Ill.
795 tons, vertical lift, feet center to center, four approach spans, feet with open grating, Raccoon creek, route Gloucester county, N. June 2, E. Donald St. way commissioner.
629 tons, Dayton, Ave. Angeles, for United office; bids opened.
600 tons, addition to stadium, New Orleans.
550 tons, manufacturing, LaRosa & Sons Inc.,
550 tons, Fridley softening, neapolis, for city.
550 tons, aircraft factory, Tex.; bids in.
525 tons, turbine supply, solidated Edison Co.
450 tons, building, Georgetown, Brooklyn, N. treasury department.
434 tons, bridge, Sumner, bids May 26.
350 tons, civic center, Falls, Mont.
300 tons, building, for memorial hospital, La, N. Y.
300 tons, telephone building, N. Y.
250 tons, sheet piling, supply contract 341, bids June 6, New York.
230 tons, highway bridge, bids June 2.
200 tons, bridge, Adams, bids June 2.
175 tons, building, Winton, O., for government.
175 tons, building, for Corp., Cumberland, Md.
170 tons, tunnel work, Pennsylvania turnpike, Harrisburg, Pa.; bids.
165 tons, research building, department of agriculture, bids in.
157 tons, bridge, Lucas, bids May 26.
150 tons, garage, for Co., Chicago.
150 tons, fair building, Delaware, O., Standard, Circleville, O., general.
125 tons, buildings, Cincinnati, for state.
125 tons, state grade steel, Ill.

bridge over Louisville
Broad, Nortonville, Ky.
vice, Ashland, Wis., for
way bridge, Massena,
Lawrence county.
ion overhead traveling
1231-D, bureau of
Denver, for Grand Coulee
ids May 24.
claiming for Coulee power
Denver, June 2, Spec.

Reinforcing

Bar Prices, Page 83

Initial price weakness
tions has resulted in
several jobs held up in
lower prices. However,
business have backfired now
prices are holding
on a good many other
projects are scarce, al-
though still a large num-
ber waiting estimates.
Including small lots and
Providence, R. I., via
approximate 650 tons.
slightly heavier, no-
b 50-ton orders. Bids
on a concrete arch
Neponset river, Bos-
ton, a fair tonnage of

Prices continue weak
concessions of \$5 and
Buying has declined
mild flurry. Leading
orders 1600 tons East
fifty-fourth to Sixty-
on which bids are in.
Bethlehem Steel Co.,
booked 1300 tons
project here, through
Philadelphia. Several
pending for the Penn-
job, but projected
wise is none too prom-

gest tonnage pending
for the Ballard bridge,
contract awarded.

Years Compared

| | Tons |
|-------------------------|---------|
| May 20 | 10,940 |
| May 13 | 9,997 |
| May 6 | 9,900 |
| 1938 | 7,204 |
| average, year, 1938 | 6,959 |
| age, 1939 | 11,145 |
| age, April | 9,494 |
| 1938 | 118,007 |
| 1939 | 211,749 |
| ts of 100 tons or more. | |

Other projects yet unplaced range from 100 to 300 tons. Washington state has postponed bids on the Lewis river span, 445 tons. The price situation is none too firm at 2.40c, following a recent cut from 2.65c.

San Francisco—Awards are light aggregating only 1358 tons, and bringing the total for the year to 71,454 tons, compared with 39,840 tons in 1938. Bids open June 12 for 200 tons or more for a gun battalion barracks, Hickham field, T. H.

St. Louis—Improvement is noted in awards and inquiries. Largest award was 650 tons for a postoffice garage here, to Laclede Steel Co. Included in pending tonnage is 600 tons for laboratory building, New Orleans.

Reinforcing Steel Awards

1800 tons, food market, Kansas City, to Sheffield Steel Corp., Kansas City, Mo.; Pette Construction Co., contractor.
1600 tons, sewage disposal plant, Gary, Ind., to Permanent Construction Co., Chicago.

1300 tons, Glenwood housing project, Philadelphia, to Bethlehem Steel Co., Bethlehem, Pa.; through Wark Co., Philadelphia.

650 tons, St. Louis postoffice garage, to Laclede Steel Co., St. Louis, through J. Alberici, St. Louis.

600 tons, Queens mid-town plaza, contract 14, New York, to Bethlehem Steel Co., Bethlehem, Pa.

445 tons, north approach piers, Raritan river bridge, Sayreville - Woodbridge, N. J., to Joseph T. Ryerson & Son Co. Inc., Chicago; through J. F. Chapman Co., Hillside, N. Y.

390 tons, water filtration plant, Cumberland, R. I., to Bethlehem Steel Co.,



Saved..SIGHT..JOB..MONEY by "Greenfield" Gages

Aging eyes could no longer read micrometer measurements of .0002"—the prescribed tolerance on ground spindle ends. So a "Greenfield" gage engineer proposed limit snap gages and appropriate setting plugs to replace the old measuring methods, and saved a job for a faithful worker. The company saved, too, for the new snap gages provided faster and more accurate control of size.

If you want rapid and accurate inspection "Greenfield" gage engineers can help you. Even if results are not as dramatic as in this instance, they will be fully as pleasing, financially.

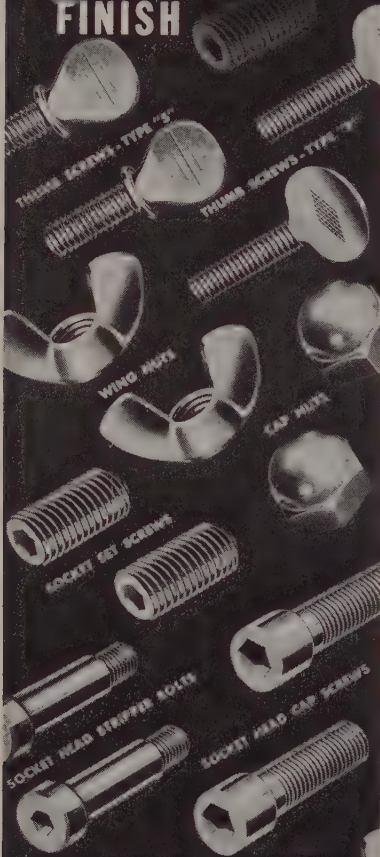
GREENFIELD TAP & DIE CORP. • Greenfield, Mass.

Detroit Plant: 2102 West Fort St. • Warehouses in New York, Chicago, Los Angeles and San Francisco. In Canada: Greenfield Tap & Die Corp. of Canada, Ltd., Galt, Ontario

GREENFIELD



Cold-forged FOR STRENGTH... UNIFORMITY... FINISH



Produced by an improved process, developed through years of experience in the manufacture of precision screw products, Parker-Kalon Wing Nuts, Cap Nuts, Thumb Screws and Socket Screws have the quality that wins unqualified approval of engineers and production men. Write for free samples . . . compare . . . see for yourself. Stocked by reliable industrial distributors near you. **PARKER-KALON CORP.** 200 Varick St., New York, N. Y.

PARKER-KALON

Cold-forged

**SOCKET SCREWS
WING NUTS · CAP NUTS
THUMB SCREWS**

SOLE THROUGH REPUTABLE DISTRIBUTORS

- Bethlehem, Pa.; J. J. McHale & Sons, Pawtucket, R. I., general contractor.
- 320 tons, Hoover war memorial library, Stanford University, Palo Alto, Calif., to Simmons Co., San Francisco.
- 300 tons, Newport levee, White River, Ark., to Jones & Laughlin Steel Corp., Pittsburgh; through Arkansas Foundry Co.; List & Clark, contractors.
- 270 tons, pier 26, contract 2144, New York, to Bethlehem Steel Co., Bethlehem, Pa.
- 270 tons, bridges, Mountain View and Clifton, N. J., to Igoe Bros. Co., Newark, N. J.; through Tidewater Contracting Co., Newark.
- 250 tons, high school, off Elm street, Northampton, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; M. J. Walsh & Sons, Holyoke, Mass., contractors.
- 250 tons, sewer, Everett, Mass., metropolitan district commission project, section 104A, to Northern Steel Co., Boston; Edward M. Matz Inc., Boston, general contractor.
- 250 tons, grain elevator, Decatur, Ill., to Sheffield Steel Corp., Kansas City, Mo.
- 200 tons, factory and office building, Gelatin Products Co., Detroit, to Bethlehem Steel Co., Bethlehem, Pa.
- 200 tons, sewage plant, Standard Brands Inc., Pekin, Ill., to Truscon Steel Co., Youngstown, O.
- 200 tons, apartment building, Twenty-sixth street and Parkway, Philadelphia, to Bethlehem Steel Co., Bethlehem, Pa.; Turner Construction Co., contractor.
- 200 tons, state bridge, Wallace, Idaho, to Soule Steel Co., Portland; Sam Orino, Spokane, Wash., general contractor.
- 185 tons, bridge and culverts, contract 3, Clifton, N. J., to Bethlehem Steel Co., Bethlehem, Pa.
- 150 tons, state bridge Bonner, Mont., and other highway work, to Bethlehem Steel Co., Seattle.
- 150 tons, sewage disposal plant, Meriden, Conn., to Northern Steel Co., Boston; Aberthaw Co., Boston, general contractor.
- 150 tons, warehouse, Boyer & Co., San Francisco, to W. C. Hauck & Co., San Francisco.
- 150 tons, Eagle street sewer, Buffalo, to Truscon Steel Co., Buffalo.
- 125 tons, sewage treatment plant, Midland, Mich., to Pollak Steel Co., Cincinnati; through Taylor & Gaskin Co., Detroit, Northeastern Construction Co., contractors.
- 120 tons, hall of music, University of Iowa, Bloomington, Iowa, to Calumet Steel Co., Chicago.
- 110 tons, 122nd field artillery, Chicago, to Truscon Steel Co., Youngstown, O.; George Sollitt, contractor.
- 105 tons, bridge, Norwalk, Conn., to Bethlehem Steel Co., Bethlehem, Pa.; Paul Mitchell Inc., Greenwich, Conn., general contractor.
- 100 tons, school No. 6, Davenport, Iowa, to Laclede Steel Co., St. Louis; Langlois Construction Co., contractor.
- 100 tons, bridge, Shetucket river, Norwich, Conn., to Bethlehem Steel Co., Bethlehem, Pa.; M. A. Gammino Construction Co. Inc., Providence, R. I., general contractor.
- Construction, West and Maeri & Co., Sea
- 600 tons, regional res New Orleans, La., ment of agriculture
- 600 tons, experiment ment of agriculture. bids May 19.
- 550 tons, sewage treatm field, Mass.
- 500 tons, building, st Elmira, N. Y.; bids J
- 500 tons, viaduct, Blue
- 480 tons, tunnel work Pennsylvania turnp Harrisburg, Pa.; bids
- 400 tons, substructure, sissippi river, Green May 16.
- 346 tons, under-pass, bids opened.
- 316 tons, paint and tr ing, specification 89 Mare Island, Calif. Kahn Co. Ltd., F building, San Francis
- 275 tons, Holly Park project, San Francis Construction Co., San at \$335,775.
- 225 tons, river front bo 3, Pittsburgh.
- 219 tons, industrial buil Island, San Francis tract to Louis C. D street, San Francis
- 205 tons, superstruct Natchez, Miss.; bids
- 200 tons, shoe factory and ences, Bata Shoe fa Md.
- 200 tons, housing project Superior Construction general contractor.
- 200 tons, gun battalion am Field, T. H.; bids
- 189 tons, natural res University of Illinois James McHugh & Son eral contractor.
- 172 tons, culvert and bry, Maryland; bids to roads commission.
- 175 tons, bars and mesh, and approaches, route Gloucester county, Ne 70 tons being mesh; Donald Sterner, state-missioner, Trenton. B date on highway pro extension, section 1, M taking 70 tons high ment.
- 175 tons, Ellinville, N. Y. supply contract 341; b York.
- 125 tons, office and war U. S. engineer boaty. Woerman Construction general contractor.
- 113 tons, bridge, Los A California; bids opened
- 110 tons, highway projec ford-Willington, Conn. Construction Co., East low.
- 100 tons, garage, Hall B erville, Mass.
- 100 tons, Raccoon creek ter county, New Jersey
- Unstated tonnage, 15,000 inforced concrete rese home, Washington; A. Boundbrook, N. J., gen

Reinforcing Steel Pending

- 2250 tons, housing project, New Orleans.
- 750 tons, Ballard bridge approaches, Seattle; general contract to Acme

Iron

Prices, Page 84

Foundry operations so far this month, according to a slower movement part of the recession results from slower demand for automotive parts. Improvement in the latter is not expected for several weeks. Pig iron is steady, but consumption is interested in forward

Shipments are about on the same period of last year. Interests have indicated that prices will be slightly higher this month as a whole. Deliveries are still 10 per cent ahead of last year, but buyers feeling the coal shortage have not been satisfactorily

Quantity of the melt to improve in quiet and unimproved iron business. Most of the demand is probably the pipe foundry. Melroe Foundry Co., Boston, has 250 tons of iron castings for service here. This quantity of common iron is 75c a pound. Heavy iron is 35c. The Everett, Mass. furnace will go in early, but has been delayed by the

Prices are receiving a boost but are expected to drop in third quarter. Quotations have been steady, and buyers are willing to contract at present levels. Demand has increased owing to settlement of the headlock, but this has not affected pig iron buying.

Prices appear to be higher than small offerings of scrap at \$2 under the market holds at the level of several weeks.

Shipments have leveled off a slight upturn earlier in the month. Blast furnace operations have changed, but one stack is being relined for production. Six of the district furnaces are active. Schedules average three

months. Sales continue to be about 100 tons each. Stocks near 60 per cent, and plants well stocked. Doxey & Coal Corp. has started a new plant that recently was producing four stacks active

Shipments are off 10

to 20 per cent since a month ago. Consumption by stove makers lacks expected seasonal improvement, while schedules elsewhere are tending downward. Production of machine tool castings also is lower. Prices are steady on current small-ton business.

St. Louis—Consumption and shipments so far in May are moderately heavier than a month ago. Jobbing plants are busier, with further betterment in prospect before June. Activity of stove foundries and farm implement plants is steady or slightly higher. Pig iron buying continues in small lots for prompt shipment.

Scrap

Scrap Prices, Page 86

Pittsburgh — Heavy melting steel and several other grades are down 50 cents. Mill buying is quiet and scrap is accumulating in dealer yards. Almost all old orders are covered, contributing to inactive buying by brokers. The latter maintain they could pick up fair quantities below the current \$14 to \$14.50 range on No. 1 steel.

Chicago—Absence of large supplies accounts for some of the strength shown in a quiet scrap market. No. 1 steel continues \$12.50 to \$13, and while for a time dealers were receiving \$12.50 and occasionally \$12.25 for this grade, prices since have firmed up to \$12.75 minimum.

Boston—Cast grades are weaker, with a wide range existing in prices. Textile and machinery cupola cast here is said to vary from \$8.50 to \$11, delivered. Export prices on heavy melting steel are steady, with demand active. The domestic market is quiet.

New York—Domestic buying is extremely dull, with some eastern mills holding up shipments. Prices generally are unchanged and subject to little test. Brokers continue to pay \$12.50 for No. 1 steel and \$11 for No. 2 for export.

Buffalo—Prices have declined 25 to 75 cents a ton on most grades. A sale of 4500 tons of No. 2 steel brought \$11 to \$11.50, a drop of 50 cents. Cast borings and turnings are down 50 to 75 cents. Some encouragement to sellers results from lifting of embargoes on shipments by two leading consumers.

Philadelphia—Scrap continues to move abroad at a rate of over 1000 tons daily. Exporters are offering \$13.50 for No. 2 and \$15 for No. 1 steel. As a result, the domestic market is well maintained, although



Greater Tonnage
Per Edge of Blade

A

AMERICAN
SHEAR KNIFE CO.
HOMESTEAD · PENNSYLVANIA

machine turnings, heavy breakable cast and stove plate are weaker. Nearby mills have picked up only small lots recently.

Frankford Arsenal takes bids June 13 on 750 tons, steel and iron turnings; 200 tons, wrought iron and steel scrap, 60 tons, terne plate linings and a small tonnage of miscellaneous material.

Detroit — Easiness in scrap quotations has lowered heavy melting steel 50 cents a ton to \$9.00 to \$9.50. Borings and long turnings also are weaker by 25 cents per ton each.

Cincinnati — Dullness in scrap has been intensified, sentimentally at least, by recent unsettlement in mill prices. Trading is lighter, dealers picking up only routine offerings. Railroad lists are attracting little interest.

St. Louis — Quotations are nominally unchanged in the face of scant demand from mills and foundries, but the market undertone is strong. Declining stocks of consumers aid the outlook for early replenishment. Offerings are scant and yard stocks only moderate.

Birmingham, Ala.—Scrap demand continues dull with prices weak although actually unchanged.

Toronto, Ont. — Scrap is slow,

except for movement of heavy melting steel to mills against contracts. Shipments to the United States are practically nil. Dealers' stocks are becoming excessive in some grades. Prices are unchanged.

Warehouse

Warehouse Prices, Page 85

Pittsburgh — Business is slightly heavier so far this month. Some prices continue weak, particularly structural shapes and bars.

Cleveland — Warehouses are expected to revise prices this week in line with reductions in mill quotations. Business recently has lagged but clarification of prices may prove stimulating.

Chicago — Price reductions have followed announcement of new mill base quotations on some products. Cold-finished bars are off \$1, hot-rolled bars \$2 and hot and cold-rolled sheets \$3. In addition, galvanized sheets have been lowered \$5 a ton.

Boston — Buying has improved, number of orders having increased materially last week. Jobbers are adjusting prices downward on sev-

eral products following market condition changes.

New York—Warehousing prices on a number of grades in line with recent market. Cold-finished carbon steel being included. Volume gained at last month's market demand well distributed.

Philadelphia—Jobbers are expected to revise prices on sheet piling in line with mill changes. Business is slightly heavier, government work prominent.

Detroit — Business is slow, though usually this is the case for warehouses. Tool and die work are fairly busy, but not gone outside Detroit.

Cincinnati — Warehouses are receiving orders for iron mines, first buying slow, but volume still is light. Iron items are more active, but farm commodities continues disappointing.

St. Louis—Sales hold, but volume still is light. Iron items are more active, but farm commodities continues disappointing.

Steel in Europe

Foreign Steel Prices

London — (By Radio) Iron and Steel Federation announced that prices of steel and iron products will be stabilized at existing levels from Oct. 30 to Oct. 31, except for hematite pig iron which will be advanced 5s and acid steel billets and rolled products from 6s to 6s 6d.

Most steelworks are operating at capacity, but iron is the only dull market. Order for railway rolling stock. Turkey has been booked for producers, valued at \$1,000,000.

April imports of steel products totaled 91,637 tons, compared with 102,637 in April 1937. Exports 146,056 tons, compared with 167,917.

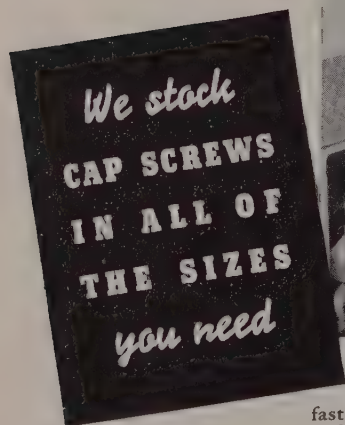
The Continent reports a recovery in activity in both domestic and foreign markets.

Iron Ore

Iron Ore Prices,

New York — Foreign iron ore prices are stronger, reflecting European demand recently. North African basic iron ore is higher at 10.00c to 10.50c c.i.f. Atlantic ports. Spanish iron ore is steady at 12.00c c.i.f. and North African iron ore also holds.

BY THE BOX OR BY THE MILLION!



• Made by the Kaufman Process, our own patented method of manufacture developed in our own plant, Cleveland Cap Screws insure fast assemblies because they are so uniformly accurate and strong. A Class 3 fit is standard. Heads are a true wrench fit. Carefully pointed, nuts are quickly assembled. A stock of 30 million Cleveland Cap Screws is maintained at our four warehouses and the factory—ready for immediate shipment. Greatly increased plant capacity provides even better facilities for prompt handling of quantity production orders. Ask for Catalog E and current price list. THE CLEVELAND CAP SCREW CO., 2935 E. 79th St., Cleveland, Ohio.

CLEVELAND CAP SCREWS
SET SCREWS • BOLTS AND NUTS

Address the Factory or Our Nearest Warehouse:

CHICAGO, 726 W. Washington Blvd.
PHILADELPHIA, 12th & Olive Sts.
NEW YORK, 47 Murray Street
LOS ANGELES, 1015 East 16th St.

Metals

Trend in nonferrous remained indecisive while there were no changes, buying was consumers do not prices, consumption is low seasonal taper-restrictions to for-estic trade have not

art and resale elec-slipped fractionally level as selling Turnover in the dropped to around but prices held at cut. World refined April increased 12, ch 11,701 tons were while world blister net decline of 6031 in this country in- This left the net in-stocks 6599 tons and ise in domestic stocks

continued to be the market with some pro-serve stocks to cover held at 4.60c, East ing three weeks of activity during the

period ended May 20 resumed its previous quiet pace. Prime west-ern held at 4.50c, East St. Louis.

Tin—Straits spot was unusually steady, fluctuating between 48.80c to 49.00c. Sellers were not inclined to shade prices since supplies of nearby metal are dwindling. The export quota for the third quarter may be increased.

Antimony—Only routine business was booked at 11.75c, New York, for American spot and nominally 14.00c, duty paid New York, for Chinese spot.

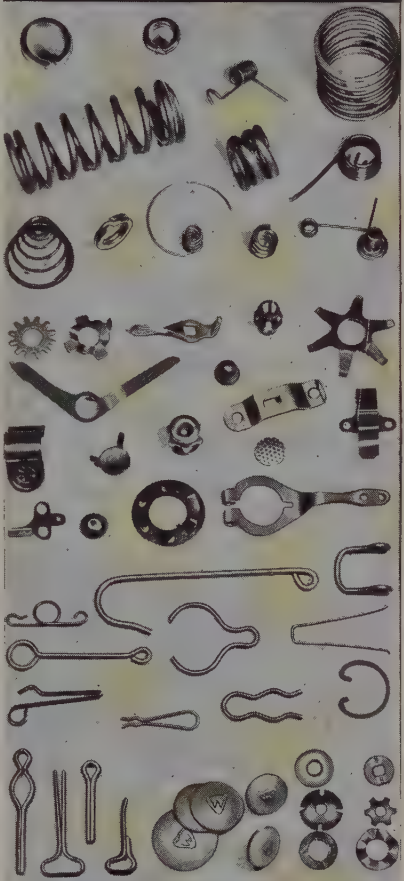
Equipment

Chicago—Inquiries are as nu-merous as ever, but orders are in-frequent. Much of present inquiry is believed only for estimating pur-poses. Level of business at present is substantially the same as a month ago. Demand for heavy machinery is decidedly slow, but requirements for smaller items have been steady. Little change in the complexion of the market is seen as likely during the remainder of the month.

Seattle — Electrical equipment, pumping items and road machinery lead the market. Bids are in for galvanized pipe, reinforcing steel,

Nonferrous Metal Prices

| Spot unless otherwise specified. Cents per pound. | | | | | | | | | |
|--|-------------------|-------------------|------------------|------------|------------------|-------------|---------------|----------------------------|------------------|
| Copper | Casting, refinery | Straits Tin, Spot | New York Futures | Lead N. Y. | Lead East St. L. | Zinc St. L. | Alumi-num 99% | Anti-mony Amer. Spot, N.Y. | Nickel Cath-odes |
| 00 | 9.62½ | 48.90 | 48.20 | 4.75 | 4.60 | 4.50 | 20.00 | 11.75 | 35.00 |
| 00 | 9.62½ | 48.87½ | 48.20 | 4.75 | 4.60 | 4.50 | 20.00 | 11.75 | 35.00 |
| 00 | 9.62½ | 49.00 | 48.25 | 4.75 | 4.60 | 4.50 | 20.00 | 11.75 | 35.00 |
| 00 | 9.62½ | 48.87½ | 48.20 | 4.75 | 4.60 | 4.50 | 20.00 | 11.75 | 35.00 |
| 00 | 9.62½ | 48.87½ | 48.20 | 4.75 | 4.60 | 4.50 | 20.00 | 11.75 | 35.00 |
| 00 | 9.62½ | 48.80 | 48.25 | 4.75 | 4.60 | 4.50 | 20.00 | 11.75 | 35.00 |
| Cents per lb., except as brass products based Conn. copper | | | | | | | | | |
| Sheets | | | | | | | | | |
| gh) | | | 16.48 | | | | | | |
| ers | | | 18.12 | | | | | | |
| es | | | 8.00 | | | | | | |
| | | | 9.75 | | | | | | |
| Tubes | | | | | | | | | |
| S | | | 19.23 | | | | | | |
| s | | | 18.62 | | | | | | |
| Rods | | | | | | | | | |
| ss | | | 11.85 | | | | | | |
| d | | | 14.62 | | | | | | |
| Anodes | | | | | | | | | |
| ed | | | 15.37 | | | | | | |
| Wire | | | | | | | | | |
| gh) | | | 16.73 | | | | | | |
| Buying Prices | | | | | | | | | |
| Composition Red Brass | | | | | | | | | |
| | | | 5.62½-5.87½ | | | | | | |
| | | | 6.50-6.75 | | | | | | |
| | | | 6.00-6.25 | | | | | | |
| | | | 6.00-6.25 | | | | | | |
| Copper and Wire | | | | | | | | | |
| 1 | | | 7.62½-7.75 | | | | | | |
| | | | 7.50-7.75 | | | | | | |
| Chicago, No. 1 | | | | | | | | | |
| St. Louis | | | 7.37½-7.62½ | | | | | | |
| | | | 7.50-7.75 | | | | | | |
| Composition Brass Borings | | | | | | | | | |
| New York | | | 4.87½-5.12½ | | | | | | |
| Light Copper | | | | | | | | | |
| New York | | | 6.12½-6.37½ | | | | | | |
| Cleveland | | | 5.75-6.00 | | | | | | |
| Chicago | | | 6.00-6.25 | | | | | | |
| St. Louis | | | 6.00-6.25 | | | | | | |
| Light Brass | | | | | | | | | |
| Cleveland | | | 3.50-3.75 | | | | | | |
| Chicago | | | 3.75-4.00 | | | | | | |
| St. Louis | | | 3.50-3.75 | | | | | | |
| Lead | | | | | | | | | |
| New York | | | 4.10-4.35 | | | | | | |
| Cleveland | | | 3.50-3.75 | | | | | | |
| Chicago | | | 3.50-3.75 | | | | | | |
| St. Louis | | | 3.50-3.75 | | | | | | |
| Zinc | | | | | | | | | |
| New York | | | 2.50-2.62½ | | | | | | |
| Cleveland | | | 2.00-2.25 | | | | | | |
| St. Louis | | | 2.00-2.25 | | | | | | |
| Aluminum | | | | | | | | | |
| Borings, Cleveland | | | 5.75-6.00 | | | | | | |
| Mixed, cast, Cleveland | | | 7.75-8.00 | | | | | | |
| Clips, soft, Cleveland | | | 14.75-15.00 | | | | | | |
| Misc. cast, St. Louis | | | 7.00-7.25 | | | | | | |
| SECONDARY METALS | | | | | | | | | |
| Brass ingot, 85-5-5-5, less carloads | | | 10.25 | | | | | | |
| Standard No. 12 aluminum | | | 12.25-12.50 | | | | | | |



■ Whether your job requires a Spring, Small Stamping, or a Wire Shape, Hubbard can work out and furnish the part you need,—in any material, and any quantity.
What is your problem? Hubbard modern facilities, skill in manufacturing, and years of experience have solved hundreds of them. Send in your drawings or samples; ask for assistance and suggestions.

**M·D·HUBBARD
SPRING CO.**
640 Central Ave., Pontiac, Mich.

THIS IS THE COMFORT AND FRIENDLINESS YOU'LL FIND AT HOTEL CLEVELAND



A cheerful,
welcoming lobby.



Food prepared the
way you like it.



Friendly, interested
service.



Comfort and relaxa-
tion in a quiet,
restful room.

Convenient. On Public Square, adjoining Union Passenger Terminal, garage, Terminal office buildings—and at the heart of the city.



HOTEL CLEVELAND

Cleveland

transformers, cable, machine lathe, drill press and tools, copper strap and other items for Bonneville authority. Pacific Pumping Co., Seattle, will furnish various pumps

and other equipment. Sound navy yard has opened bids for and power lines in Oregon.

Construction and Enterprise

Ohio

CHAGRIN FALLS, O.—City, board of public affairs, Edith Himler, clerk, takes bids due at noon, June 3, on 150-gallons per minute deep well pump, drop pipe, and a vertical motor with controls.

CINCINNATI—Phillips Pump & Tank Co., H. Phillips, president, has given a contract to Parkway Construction Co., Keith building, Cincinnati, for building a 132 x 240-foot factory estimated to cost about \$45,000.

CLEVELAND—City, division of light and power, takes bids due at noon, June 9, on one 12,500-kilowatt turbogenerator, 3600 revolutions per minute, superposed steam turbine generator and one 25,000-kilowatt steam turbine generator. Bids received to same date on three steam generating units, complete with boilers, superheaters, furnaces, fuel equipment, draft fans, etc. Total cost approximately \$800,000. Certified check or bond 5 per cent with bid. Peter J. Loftus, Pittsburgh, consulting engineer.

COLUMBUS, O.—Battelle Memorial institute will soon award contracts for constructing and equipping a four-story, 54 x 174-foot laboratory addition costing \$225,000. D. A. Carmichael, Columbus, architect.

MANSFIELD, O.—City, Earl Nist, safety-service director, is considering plans for constructing a power plant to generate electricity from gases produced as a by-product by its sewage disposal plant. W. C. Statler, city engineer.

McGUFFY, O.—Village, William Thomas, clerk, proposes to construct a waterworks system. Will apply for WPA grant and submit \$14,000 bond issue to voters.

REPUBLIC, O.—Village, C. E. Womer, mayor, has applied to WPA for grant in the projected construction of a waterworks system estimated to cost \$78,000. Includes wells, pump, distribution system and elevated tank. Consulting engineers, Champe, Finkbeiner & Associates, Toledo, O. (Noted Feb. 20.)

SOUTH LEBANON, O.—City, W. W. Shurts Jr., clerk, has plans underway for a waterworks with capacity of 50,000 gallons, estimated to cost \$54,000.

SOUTH WEBSTER, O.—Village, J. B. Cole, mayor, has partially completed its plans for constructing waterworks and sewage disposal plants. Will market \$25,000 revenue bond issue. Consulting engineer, H. K. Martin, Portsmouth, O. (Noted May 1.)

TROY, O.—Hobart Mfg. Co., J. M. Spencer, president, has awarded contract to Austin Co., Cleveland, for building two plant additions estimated to cost over \$40,000.

Connecticut

HARTFORD, CONN.—United States engineer, Providence, R. I., takes bids until May 26 for three pumps, three gasoline engines and gear units for pumping station at North Meadows.

New York

BUFFALO—Machine Tool Sales Co. Inc. has been incorporated to deal in

machines and tools, \$50,000. Representative Prudential building, B.

Massachusetts

SPRINGFIELD, MASS.—City, board of streets and a Phillips, superintendent board, asks bids until tract 7 in the construction treatment plant. Gasco Cleveland, engineers.

Pennsylvania

BLOSSBURG, PA.—J. Co., C. B. Ward, president, takes bids for rebuilding its \$100,000.

ERIE, PA.—City, mayor, is completing plans about June 1, and will take bids on a chlorination, 18 chlorinating tanks at \$18,000. City engineer (Noted April 17.)

Illinois

CASEY, ILL.—City, J. taking bids on additional treatments in its power plant. St. Louis, consulting engineer.

CHICAGO—Chicago P. has let contract to Carl Lautermilch, 400 West Chicago, for a two-story plant costing about \$100,000.

CHICAGO—American Co. has awarded contract for constructing a factory costing approximately \$100,000. Elston Construction Co., Elston avenue, Chicago.

Indiana

FT. WAYNE, IND.—F. Co., V. F. Rea, president, takes bids to Indiana Engineering Co., 303 Old First B. Wayne, for constructing a 120-foot plant addition.

MISHAWAKA, IND.—Gan Electric Co., South construct an addition to station here, and install a turbogenerating unit. This is company's Mishawaka.

District of Columbia

WASHINGTON—Navy bureau of supplies and bids until 10 a.m., May, driven miller and shaft (6276); and a motor-driven (schedule 6277); until driven centrifugal pump (6286); and until June engine lathes (schedule motor-driven milling, drill machine of horizontal 6295).

Florida

DELAND, FLA.—City, engineer, has received \$44 and proposes to construct

Mississippi

COLUMBUS, MISS.—City

SCREENS

Perforated Metal



Irvington & King
PERFORATING CO.

Fillmore St., Chicago, Ill.
New York Office—114 Liberty St.

METALS OF EVERY DESCRIPTION
Promptly made to your exact specifications. We can furnish any size or style of perforations desired.
CHICAGO PERFORATING CO.
24th Place Canal 1459 Chicago, Ill.

LOCOMOTIVE CRANES
CRAWLER CRANES
SHOVELS
LOCOMOTIVE CRANE CO.
Piquette Ohio

H Serving American Industry
Since 1884 — Overhead
Electric Cranes and Hoists
Crawler Cranes • Electric
Motors • Arc Welders •
Welding Electrodes.
Harnischfeger Corporation
4411 W. National Ave., Milwaukee, Wis.

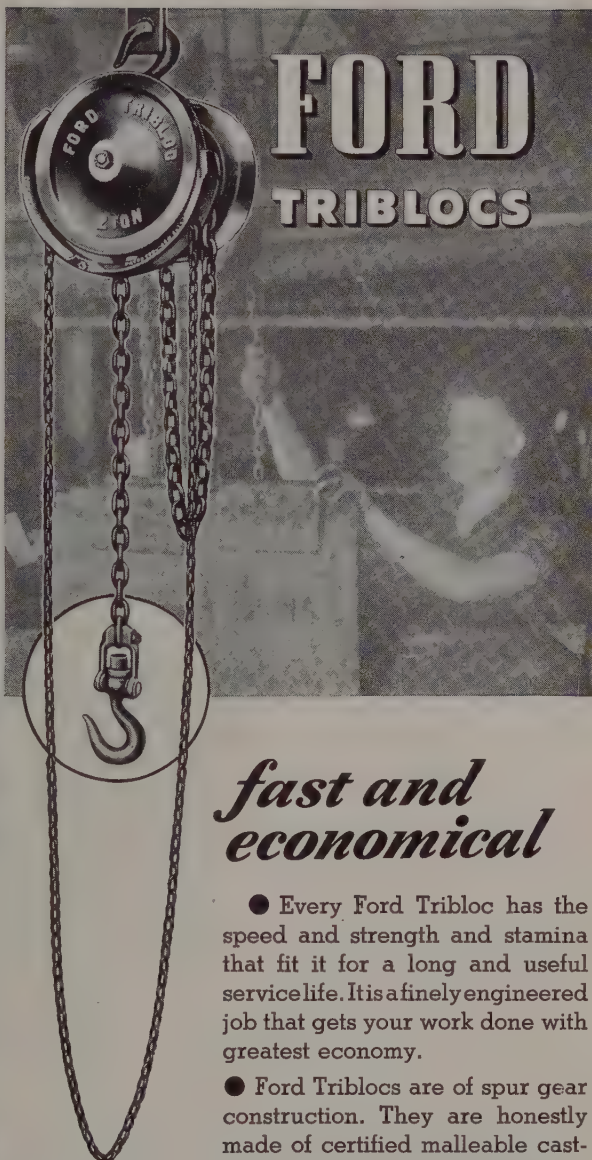
AND COMBUSTION ENGINEERS
SPECIALIZING IN
EARTH FURNACES
ENGINEERING
Corporation TELEPHONE ATLANTIC 4480



HILLSIDE
FLUOR SPAR
ROSICLARE
Barges
500 tons
Ohio River
from our
river loading
station at
Rosiclare.

Shippers from Rosiclare on Ill. Cent. RR
WASHED GRAVEL

DE FLUOR SPAR MINES
Phone: Ran. 1151
Carbon St. Chicago, Illinois



FORD

TRIBLOCS

fast and economical

- Every Ford Tribloc has the speed and strength and stamina that fit it for a long and useful service life. It is a finely engineered job that gets your work done with greatest economy.
- Ford Triblocs are of spur gear construction. They are honestly made of certified malleable castings, high grade drop forgings and ACCO High Carbon Heat Treated Chain of high tensile strength and high elastic limit.
- Ford Triblocs, with all their fine quality, are priced surprisingly low. Order from your distributor.

CAPACITIES
1/4 TON
TO
40 TONS

BUY ACCO QUALITY in Ford Triblocs and other Ford Hoists—and in Page Welding Electrodes, Tru-Lay Preformed Wire Rope, Reading-Pratt & Cady Valves, Campbell Abrasive Cutting Machines, American Welded and Weldless Chains.

FORD CHAIN BLOCK DIVISION

PHILADELPHIA, PENNSYLVANIA

See our exhibit, Metals Building,
New York World's Fair



TRADE MARK

AMERICAN CHAIN & CABLE
COMPANY, Inc.

In Business for Your Safety

—Construction and Enterprise—

Jr., secretary-treasurer, receives bids May 29 for constructing an extension to its light and power distribution system at cost of \$39,000. Beard Engineering Co., Columbus, consulting engineer.

Tennessee

MT. PLEASANT, TENN.—Victor Chemical Works, Chicago, plans to install motors, controls, and other power equipment in connection with improvements to its phosphate plant costing \$850,000. Work is to begin soon.

Missouri

ANNAPOLIS, MO.—Black River Electric co-operative, Ray Brown, project superintendent, has completed plans and will soon take bids in the construction of 145 miles of rural power lines to cost approximately \$100,000. Consultants, E. T. Archer & Co., Kansas City, Mo.

BOONVILLE, MO.—REA has allotted \$342,000 to the Co-Mo Electric co-operative, Paul Doll, county agent, to finance construction of some 330 miles of rural electric distribution lines in four counties.

Arkansas

MCCRORY, ARK.—Woodruff County Electric Co-operative Corp. is making plans to construct at cost of \$316,000 some 250 miles of rural electric power lines through six counties.

Oklahoma

OKMULGEE, OKLA.—East Central Oklahoma Power Co. has received \$331,000 REA allotment and will erect 331 miles of rural electric power transmitting lines. Mid-west Engineering Co., Tulsa, Okla., consulting engineer.

Minnesota

GOOSEBERRY STATE PARK, MINN.—National Park service, H. A. Schwant, purchasing officer, Omaha, Nebr., will purchase Imhoff tank, pipe lines, settling

tank and chlorinator and construct filter plant.

MINNEAPOLIS—Lewis Bolt & Nut Co., Meyer Paper, president, maker of various steel products, is breaking ground for a large hot-dip galvanizing plant. Will install modern equipment, including conveyors. Johnson & Johnson, St. Paul, architects.

Texas

DECATUR, TEX.—Wise Electric co-operative has received REA approval on 163 miles of rural electric power transmitting lines costing about \$134,000.

FT. WORTH, TEX.—Cosden Petroleum Corp. proposes to install motors and controls, compressors, conveyors, pumping machinery and other equipment in new oil refinery, and in refining plant being improved at Big Spring, Tex. Project to cost total of about \$500,000.

GARLAND, TEX.—City, J. A. Alexander, mayor, receives bids May 23 for power plant improvements, including 375-kilowatt diesel generating unit. Available funds total \$50,000. H. B. Gieb, Dallas, Tex., consulting engineer.

HOUSTON, TEX.—American Can Co. has awarded contract to Lundoff-Bicknell Co., 100 North LaSalle street, Chicago, for erecting a one-story, 165 x 207-foot addition to its warehouse at cost of \$100,000.

Kansas

CHANUTE, KANS.—City, R. Cooper, clerk, asks bids on waterworks improvements costing \$40,000, and involving water softener, settling tanks and chemical feeding equipment. R. B. Reeves, city engineer.

Nebraska

BATTLE CREEK, NEBR.—Madison County Rural Public Power district, Frank Malone, president, takes bids to 10 a.m., May 25, on construction of 273 miles of rural electric power transmis-

sion lines in five counties. Check 5 per cent to H. S. Nixon, Omaha, engineer.

Iowa

BURLINGTON, IOWA—City has been incorporated metal cabinets and other Kelly, president and treasurer.

IRETON, IOWA—City clerk, will vote May 23 issue bonds to finance payments of its waterworks.

WATERLOO, IOWA—Products Co., manufacturing machinery, plans to construct 38 x 200-foot addition. Considerable equipment.

Wyoming

PINE BLUFFS, WYO.—City, has allotted \$234,000 to the Rural finance construction of power transmitting lines.

Nevada

PIOCHE, NEV.—Commodities Co., E. H. Smith, City, Utah, general manager, build a 1000-ton flotation mining properties here.

Pacific Coast

CUPERTINO, CALIF.—Oakland, Calif., propose cost of \$4,000,000 a manufacturing plant.

HERCULES, CALIF.—Co., San Francisco, will equipment in new addition for producing synthetic estimated at \$400,000.

LOS ANGELES—Ducob Supply Co. plans to construct storage building and covering total area of and costing \$300,000.

REDDING, CALIF.—University service, Government, Cal., asks bids for unit and four portable for

PORTLAND, OREG.—City authority is taking bids construction of control tower and oil purifying tanking tower will have including 33-foot steel d facilities for repairing

SPOKANE—Washington Co., 423 First avenue, incorporated with capital R. O. Oscarson and associates

SPOKANE—Washington Co., Kinsey Robinson, president, expend \$400,000 this year power lines totaling 40 counties.

Canada

PONOKA, ALTA.—Mr. Galbraith, clerk, has planning a complete waterw using system at cost of

KINGSTON, ONT.—City constructing a sewage costing \$500,000. Gore & consulting engineers.

ARVIDA, QUE.—Alumina Ltd., Montreal, has constructing a \$150,000 addition Mathers & Haldenby, Toronto

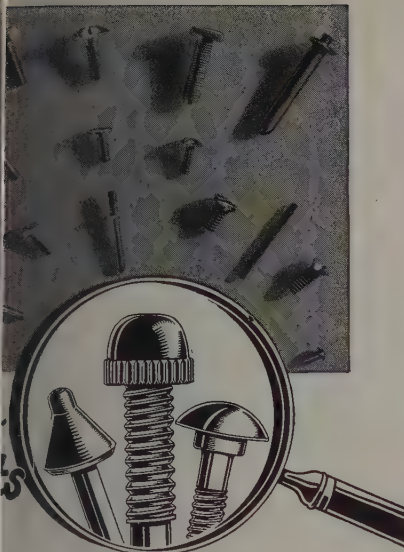
"CLOSE-UP" of *Achievement*



**BELLEVUE
STRATFORD**
IN PHILADELPHIA

Claude H. Bennett
General Manager

★ Limelighted leaders of business . . . sophisticated socialites . . . people in the front rank of important activities always choose the Bellevue. It has distinguished friends all over the world. Air Conditioned Restaurants Include Historic Philadelphia in your Itinerary.



My-minded buyers of made-to-order screws
headed parts are discovering real savings in
GRESSIVE cold upset products. They have found
many parts now milled from the bar can be
ed efficiently and accurately with our modern
pment—at reduced costs. We invite you to
ait samples or outline ideas to our specialists.
r advice—intelligently and promptly given—
show you the way to greater fastening economies.

GRESSIVE MFC. CO.
TON, CONNECTICUT

ONT IRON WORKS
PHIA NEW YORK EDDYSTONE

neers - Contractors - Exporters
AL STEEL—BUILDINGS & BRIDGES
RIVETED—ARC WELDED
T INTERLOCKING CHANNEL FLOOR

Write for Catalogue
hila., Pa. New York Office—44 Whitehall St.

H-STERLING

• STAINLESS STEELS • SINTERED CARBIDES
E SHOP TOOLING • McKEESPORT, PA.

The
acture of Steel Sheets

By Edward S. Lawrence
has been written in the — 244 pages
it may assist in better 116
ting members of the engi- illustrations
ng and operating staffs of the
tomotive and allied industries
with the principal steps involved
in the manufacture of steel sheets

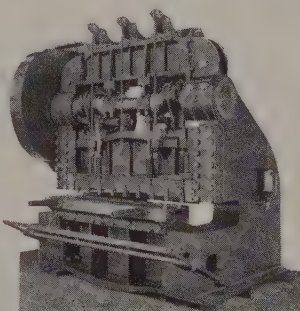
ton Publishing Company
Book Department
3rd St. Cleveland, O. 427-S.

PUNCHES • SHEARS • SPACING TABLES

THOMAS

CUSTOM ENGINEERED PLATE SHEARS

Of cast steel construction, with forged S.A.E. steel shaft, precision cut gears and central lubricating system, the Shear illustrated cuts high tensile steel plate up to 1 1/4 by 100 inches.



This machine is another in the long list of custom engineered Shears created by Thomas to meet a particular need for an individual customer.

Put your shearing problems up to Thomas

THOMAS
MACHINE MANUFACTURING COMPANY

Name changed from Thomas Spacing Machine Co.
PITTSBURGH, PA.

FABRICATING MACHINERY

PRESSES • DIES • METAL-FORMING MACHINERY

BENDING AND STRAIGHTENING MACHINES • MULTIPLE DRILLS

STAINLESS STEEL

ALSO

HIGH SPEED and CARBON TOOL STEEL
LATROBE ELECTRIC STEEL CO. LATROBE, Pa.

THE JACKSON IRON & STEEL CO.

MANUFACTURERS OF

"JISCO"

PIG IRON SPECIALTIES

JACKSON, OHIO

SUPERIOR

STEEL CORPORATION

HOT AND COLD ROLLED STRIP STEEL
AND SUPERIOR STAINLESS STEELS

Successfully serving steel consumers for almost half a century

EXECUTIVE OFFICES — GRANT BLDG., PITTSBURGH, PA.
GENERAL OFFICES AND WORKS — CARNEGIE, PA.

CROSBY FOR STAMPINGS

All our efforts have been concentrated on one product - - STAMPINGS - - for more than 40 years. We have made stampings, deep, intricate, heavy, light, large and small, for nearly every branch of industry.

THE CROSBY COMPANY

Buffalo, N. Y.



MALLEABLE IRON

Detachable and R Chain, Malleable Wa Oarlocks. Catalogue

PEORIA MALLEABLE IRON
PEORIA, ILLINOIS



Certified Steel

FOR USE IN BLAST CLEANING

SAMSON STEEL
ANGULAR STEEL

PITTSBURGH CRUSHED STEEL
STEEL SHOT & GRIT CO.

VULCAN STEAM FORGING COMPANY HAMMERED FORGINGS

220-250 RANO STREET

BUFFALO, N. Y.

SMALL ELECTRIC STEEL CO.

(Capacity 500 Tons Per Month)

WEST STEEL
CLEVELAND



CASTING
OHIO, U.S.A.

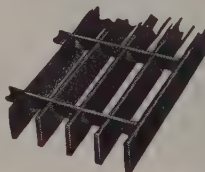
"He Profits Most
Who Serves Best"



"COWLES"

ROTARY SLITTING KNIVES
for Modern Requirements
Highest Quality Long Service
The Product of Many Years Specialization
MADE BY TOOLMAKERS

COWLES TOOL COMPANY
Cleveland, Ohio



TRI-L

Grating and
Steel — Aluminum
No Rivets, Bolts
Manufacture
The Tri-Lok Co., Pitt

National Distr
BRAVO CORPORATION
300 Penn Ave.

W. P. SNYDER & COMPANY

Iron Ore Pig Iron
Coal and Coke



SHENANGO-FURNACE

OLIVER BUILDING
PITTSBURGH, PA.

H. A. BRASSERT & COMPANY

Consulting Engineers
for IRON, STEEL, FUEL and
HEAVY METALLURGICAL
INDUSTRIES

310 SOUTH MICHIGAN AVENUE CHICAGO



SPRING COTTERS
RIVETED KEYS
SCREW EYES, HOOKS
and WIRE SHAPES

HINDLEY MFG. CO.

Valley Falls, R. I.

ROLL PASS DESIGN

By W. Trinks

New Second Editions
VOLUMES I and II

Volume I } 201 Pages—7 Tables—
139 Drawings—\$4.50 Postpaid

Volume II } 246 Pages—21 Tables—7 Charts—
176 Illustrations—\$6.00 Postpaid

BOTH volumes are thoroughly revised, enlarged and rewritten to include the latest developments and investigations involved in roll pass design.

Professor Trinks, the leading authority in the theory of roll design in the United States, presents the rolling mill industry a complete treatise on fact and theory underlying all roll pass design, including applications of rolling principles, rather than a compilation of passes.

THE PENTON PUBLISHING

Book Department

1213 W. 3rd St.

Cleveland, Ohio

Classified

HELP WANTED

Single Insertion—50c per line
Three to Six Insertions—40c per line
Six or more Insertions—45c per line

Seven words of ordinary length make a line.
FIRST LINE IN BOLD FACE TYPE
A box number address counts as one line.

POSITIONS WANTED

Single Insertion—25c per line
Three to Six Insertions—24c per line
Six or more Insertions—23c per line

ment Service

D POSITIONS

to \$25,000
organized advertising
s' recognized standing
carries on preliminary
positions of the caliber
rough a procedure indi-
client's personal re-
weeks are required to
individual must finance
of his own campaign.
ected by refund provi-
our agreement. Iden-
d, if employed, present
if your salary has been
and only name and ad-
R. W. Bixby, Inc., 110
falo, N. Y.

Wanted

CHIEF ENGINEER

opment training. Prac-
dies, machine design-
ngs, welding, plant and
Salary \$6,000.

S CLEARING HOUSE,
Chicago.

NTED:

th technical training to
tion in Company manu-
products, bolts and
el finishing lines. Must
experience in operating
erial positions. Excel-
ght man with opportuni-
nt. Address Box 910,
g., Cleveland.

is Wanted

ENGINEER—AGE 24,
l experience in a metal-
y, work consisting of
veloping work, produc-
eld troubles, etc., on a
errous and nonferrous
loyed. Excellent refer-
ox 911, STEEL, Penton

ER TO REPRESENT
customers in Cleveland.
Euclid P. O., Cleveland,

GER AND SALES EN-
y duty and mechanical
ontacting steel mills and
esires making new con-
cern. Salary and
ox 900, STEEL, Penton

IST AND METALLUR-
perence laboratory re-
l, heat treating, sales,
roduction. Now em-
lable upon reasonable
Location immaterial.
STEEL, Penton Bldg.,

ER SEEKS NEW CON-
of assuming responsi-
all factory or machine
ars experience on pur-
and personnel work.
experience. Cap. furnish
American, 35 years
stern location preferred.
STEEL, Penton Bldg.,

Wanted

WANTED

One Riehle or Olsen Testing Machine.
Must be in perfect operating condition.

MONARCH STEEL COMPANY

Indianapolis, Ind.

WANTED: A used 50 or 60-ton
bottom pour steel ladle for use
in a steel foundry.

Address Box 912,
STEEL
Penton Bldg. Cleveland.

WANTED

600 H.P. HERRINGBONE GEAR
REDUCTION SET.

Give Details and Price.

Address Box 913
STEEL, Penton Building, Cleveland

Opportunities

STEEL WAREHOUSE HAS SALESMEN
TRAVELING NORTHERN OHIO AND
WOULD LIKE TO SECURE ADDITIONAL
ITEMS TO SELL. WE ARE WELL
KNOWN TO THE TRADE AND FINAN-
CIALLY GOOD. ADDRESS Box 880, STEEL,
Penton Bldg., Cleveland.

PROMINENT SOUTHERN STRUCTURAL
STEEL FABRICATOR DESIRES TO GET
INTO MANUFACTURING OF SOME
STEEL COMMODITY AND IS INTER-
ESTED IN EMPLOYING MAN WITH
IDEA. COMMODITY MUST REQUIRE
MINIMUM AMOUNT OF MACHINERY
AND MUST BE SOMETHING THAT IS
A SURE MONEY MAKER. GOOD OPPOR-
TUNITY AWAITS PARTY AS FIRM HAS
EXCELLENT REPUTATION AND MONEY.
ADDRESS Box 909, STEEL, Penton Bldg.,
Cleveland.

Castings

OHIO

THE WEST STEEL CASTING CO., Cleve-
land. Fully equipped for any production
problem. Two 1½ ton Elec. Furnaces.
Makers of high grade light steel castings,
also alloy castings subject to wear or
high heat.

PENNSYLVANIA

NORTH WALES MACHINE CO., INC.,
North Wales. Grey Iron, Nickel, Chrome,
Molybdenum Alloys. Semi-steel. Superior
quality machine and hand molded sand
blast and tumbled.

Equipment For Sale

FOR SALE

Loy and Norwath 10 ft. Press Brake; 34 ft.
Draw Bench for steel molding; No. 6 Whit-
ing Punch and Shear; 220 Volt A.C.
Motors and Lincoln 200 Amp. Arc Welder.
Also other sheet metal equipment.

PAR-BROOK MFG. CO.

4600 Brookpark Rd. Cleveland, O.
Phone FL. 5770

Rails—"1 Ton or 1000"

NEW RAILS—5000 tons—All Sections—All Sizes.
RELAYING RAILS—25,000 tons—All Sections—
All Sizes, practically as good as New.
ACCESSORIES—Every Track Accessory carried
in stock—Angle and Splice Bars, Bolts, Nuts,
Frogs, Switches, Tie Plates.

Buy from One Source—Save Time and Money

'Phone Write or Wire

L. B. FOSTER COMPANY, Inc.
PITTSBURGH NEW YORK CHICAGO

FOR SALE: About 25 tons .0478" Enamel-
ing Iron Blanks, mostly ARMCO. Two
sizes, will trim 16¼" square and 15½" x
16". Could furnish separately. Substantial
quantity available every month. Your offer
carefully considered.

GEO. D. ROPER CORPORATION

Dept. 2 Rockford, Ill.

Bids Wanted

PROCUREMENT DIVISION, Public Build-
ings Branch, Washington, D. C., May 5,
1939—Sealed proposals in duplicate will be
publicly opened in this office at 1 p. m.,
June 6, 1939, for extension and remodeling
of the U. S. P. O. at Columbus, Ind. Upon
application, one set of drawings and specifi-
cations will be supplied free to each
general contractor interested in submitting
a proposal. The above drawings and specifi-
cations MUST be returned to this office.
Contractors requiring additional sets may
obtain them by purchase from this office
at a cost of \$7 per set, which will not be
returned. Checks offered as payment for
drawings and specifications must be made
payable to the order of the Treasurer, U. S.
Drawing and specifications will not be fur-
nished to contractors who have consist-
ently failed to submit proposals. One set
upon request, and when considered in the
interests of the Government, will be fur-
nished, in the discretion of the Assistant
Director, to builders' exchanges, chambers
of commerce or other organizations who
will guarantee to make them available for
any sub-contractor or material firm inter-
ested, and to quantity surveyors, but this
privilege will be withdrawn if the sets are
not returned after they have accomplished
their purpose. W. E. Reynolds, Assistant
Director of Procurement, Public Buildings
Branch.

Metal Finishing

PENNSYLVANIA

PHILADELPHIA RUST-PROOF CO., 3229
Frankford Ave., Philadelphia. Electro-
plating; cadmium; tin; zinc; chromium;
copper; nickel and silver; Anodizing of
Aluminum by Alumilite process Parker-
izing; Sherardizing; Bonderizing.

♦ ♦ ADVERTISING INDEX

Where-to-Buy Products Index carried in first issue of month.

| A | Page | Buffalo Galvanizing & Tinning Works, Inc. | Page | Fitzsimons Co., The |
|--|------|---|------|-------------------------|
| Abrasive Co., Division of Simonds Saw & Steel Co. | — | Bullard Co., The | — | Flinn & Drefflein Co. |
| Acme Galvanizing, Inc. | — | Bundy Tubing Co. | — | Footo Bros. Gear & Mach |
| Acme Steel & Malleable Iron Works | — | | | Ford Chain Block Divi |
| Ahlberg Bearing Co. | — | | | can Chain & Cable Co |
| Air Reduction Sales Co. | — | | | Foster, L. B., Inc. |
| Ajax Electric Co., Inc. | — | | | Foxboro Co., The |
| Ajax Electric Furnace Corp. | — | | | |
| Ajax Electrothermic Corp. | — | | | |
| Ajax Metal Co., The | — | | | |
| Alan Wood Steel Co. | 9 | | | |
| Allegheny Ludlum Steel Corp. | — | | | |
| Allen-Bradley Co. | — | | | |
| Alliance Machine Co., The | — | | | |
| Allis-Chalmers Mfg. Co. | — | | | |
| Alpha-Lux Co., Inc., The | — | | | |
| American Agile Corp. | — | | | |
| American Brass Co., The | — | | | |
| American Bridge Co. | — | | | |
| American Chain & Cable Co., Inc., Ford Chain Block Division | 101 | | | |
| American Chain & Cable Co., Inc., Page Steel & Wire Division | — | | | |
| American Chemical Paint Co. | — | | | |
| American Engineering Co. | — | | | |
| American Gas Association | 108 | | | |
| American Gas Furnace Co. | — | | | |
| American Hammered Piston Ring Division of Koppers Co. | — | | | |
| American Hollow Boring Co. | — | | | |
| American Hot Dip Galvanizers' Association | — | | | |
| American Metal Hose Branch of The American Brass Co. | — | | | |
| American Monorail Co. | 33 | | | |
| American Pulverizer Co. | — | | | |
| American Roller Bearing Co. | — | | | |
| American Rolling Mill Co., The | 15 | | | |
| American Screw Co. | — | | | |
| American Shear Knife Co. | 97 | | | |
| American Steel & Wire Co. | 65 | | | |
| American Tinning & Galvanizing Co. | — | | | |
| Amsler-Morton Co., The | — | | | |
| Anaconda Wire & Cable Co. | — | | | |
| Andrews Steel Co. | — | | | |
| Apollo Steel Co. | — | | | |
| Armstrong Cork Co. | — | | | |
| Atlantic Stamping Co. | — | | | |
| Atlas Car & Mfg. Co. | — | | | |
| Atlas Drop Forge Co. | — | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

ADVERTISING INDEX ♦ ♦

Where-to-Buy Products Index carried in first issue of month.

| Page | | Page | | Page |
|-----------------------|--------|---|--------|------|
| ring Co. | — | Oil Well Supply Co. | — | T |
| he | — | Oxweld Acetylene Co. | — | |
| Co. | — | | P | |
| ther, Inc. | — | Page Steel & Wire Division of Ameri- | — | |
| | — | can Chain & Cable Co., Inc. | — | |
| L | — | Parker-Kalon Corp. | 96 | |
| e Co. | — | Parkin, Wm. M., Co. | — | |
| Co., The | — | Peabody Engineering Corp. | 80 | |
| Inc. | — | Penn Galvanizing Co. | — | |
| | — | Pennsylvania Industrial Engineers.. | — | |
| eel Co. | 103 | Pennsylvania Salt Mfg. Co. | 59 | |
| chine Tool Co., The | — | Penola, Inc. | 89 | |
| | — | Peoria Malleable Castings Co. | 104 | |
| Steel Co. | — | Perkins, B. F., & Son, Inc. | — | |
| s Rope Co. | 78 | Pheoll Mfg. Co. | — | |
| Machine Division of | — | Philadelphia Gear Works | — | |
| The | — | Pittsburgh Crushed Steel Co. | 104 | |
| | — | Pittsburgh Lectromelt Furnace Corp.. | — | |
| Co., The | 63 | Pittsburgh Plate Glass Co. | — | |
| | — | Pittsburgh Rolls Division of Blaw- | — | |
| B. | — | Knox Co. | — | |
| | — | Pittsburgh Steel Co. | — | |
| Corp. | 101 | Poole Foundry & Machine Co. | — | |
| | — | Power Piping Corp. | — | |
| Mc | — | Pressed Steel Tank Co. | 92 | |
| | — | Prest-O-Lite Co., Inc., The | — | |
| | — | Progressive Mfg. Co. | 103 | |
| | — | Pure Oil Co., The | — | |
| | — | | R | |
| | — | Raymond Mfg. Co., Division of Asso- | — | |
| | — | ciated Spring Corp. | — | |
| | — | Reliance Electric & Engineering Co.. | — | |
| M | — | Republic Steel Corp. | 12, 13 | |
| ill Co. | — | Research Corp. | — | |
| achinery Co. | — | Riverside Foundry & Galvanizing Co.. | — | |
| Co., The | — | Roper, Geo. D., Corp. | — | |
| Co. | — | Ruemelin Mfg. Co. | — | |
| Inside Front Cover | — | Russell, Burdsall & Ward Bolt & Nut | — | |
| Corp. | — | Co. | — | |
| Corp. | — | Ryerson, Joseph T., & Son, Inc. | 22 | |
| | — | | S | |
| | — | St. Joseph Lead Co. | — | |
| ill Corp. | — | Salem Engineering Co. | 39 | |
| ucts Co. | — | Samuel, Frank, & Co., Inc. | — | |
| on Co. | — | San Francisco Galvanizing Works... | — | |
| g Co. | — | Sanitary Tinning Co., The | — | |
| | — | Scovill Mfg. Co. | — | |
| | — | Scully Steel Products Co. | — | |
| | — | Shafer Bearing Corporation | — | |
| | — | Shaw-Box Crane & Hoist Division, | — | |
| | — | Manning, Maxwell & Moore, Inc.. | — | |
| N | — | Shell Union Oil Corporation | — | |
| el Co. | — | Shenango Furnace Co., The | 104 | |
| Metals Corp. | — | Shenango-Penn Mold Co. | — | |
| Gas Co. | — | Shepard Niles Crane & Hoist Corp.... | — | |
| | — | Shuster, F. B., Co., The | — | |
| | — | Simonds Gear & Mfg. Co. | — | |
| Ordinance Co. | — | Simonds Saw & Steel Co. | — | |
| | — | Sipe, James B., & Co. | — | |
| & Creosoting Co. | — | SKF Industries, Inc. | — | |
| Foundry Co. | — | Sleeper & Hartley, Inc. | — | |
| Mfg. Co. | — | Snyder, W. P., & Co. | 104 | |
| rp. | 10 | Socony-Vacuum Oil Co., Inc. | — | |
| | — | Spowers, W. H., Jr. | — | |
| Supply Co., Inc.. | — | Standard Galvanizing Co. | — | |
| Division General Mo- | — | Standard Pressed Steel Co. | — | |
| & Coke Co. | — | Standard Steel Works Co. | — | |
| | — | Standard Tube Co. | — | |
| Jersey Lubricant Co. | — | Stanley Works | — | |
| & Tool Works..... | 61 | Stearns Magnetic Mfg. Co. | — | |
| ucts Div., Republic | 12, 13 | Steel & Tubes, Inc. | 12, 13 | |
| Bearings Corp. | — | Steel Founders' Society of America.. | — | |
| | — | Stewart Furnace Division, Chicago | — | |
| | — | Flexible Shaft Co. | — | |
| | — | Stop-Rust Co., The | — | |
| | — | Streine Tool & Mfg. Co., The..Front Cover | — | |
| O | — | Strong Steel Foundry Co. | — | |
| | — | Sturtevant, B. F., Co. | 20 | |
| | — | Sun Oil Co. | — | |
| Corp. | — | Superior Steel Corp. | 103 | |
| Crane Co. | 101 | Surface Combustion Corp. | — | |
| y Co., The | — | Syracuse Hotel | — | |
| | — | | T | |
| | — | Tar & Chemical Division of Koppers | — | |
| | — | Co. | — | |
| | — | Tennessee Coal, Iron & Railroad Co.. | — | |
| | — | Thomas Machine Manufacturing Co.. | 103 | |
| | — | Thomas Steel Co., The | — | |
| | — | Thomson-Gibb Electric Welding Co.. | — | |
| | — | Tide Water Associated Oil Co. | — | |
| | — | Timken Roller Bearing Co....Back Cover | — | |
| | — | Timken Steel & Tube Division, The | — | |
| | — | Timken Roller Bearing Co. | — | |
| | — | Tinnerman Stove & Range Co. | — | |
| | — | Titan Metal Mfg. Co. | — | |
| | — | Toledo Stamping & Mfg. Co. | — | |
| | — | Tomkins-Johnson Co. | — | |
| | — | Torrington Co., The | — | |
| | — | Towmotor, Inc. | — | |
| | — | Tri-Lok Co. | 104 | |
| | — | Truscon Steel Co. | 12, 13 | |
| | — | | U | |
| | — | Union Carbide & Carbon Corp. | 5 | |
| | — | Union Carbide Sales Co. | — | |
| | — | Union Drawn Steel Div., Republic Steel | — | |
| | — | Corp. | 12, 13 | |
| | — | Union Steel Castings Co. | — | |
| | — | United Engineering & Foundry Co.... | — | |
| | — | United States Rubber Co. | — | |
| | — | United States Steel Corp., Subsidiaries | 65 | |
| | — | American Bridge Co. | — | |
| | — | American Steel & Wire Co. | — | |
| | — | Carnegie-Illinois Steel Corp. | — | |
| | — | Columbia Steel Co. | — | |
| | — | Cyclone Fence Co. | — | |
| | — | Federal Shipbuilding & Dry Dock Co. | — | |
| | — | National Tube Co. | — | |
| | — | Oil Well Supply Co. | — | |
| | — | Scully Steel Products Co. | — | |
| | — | Tennessee Coal, Iron & Railroad Co. | — | |
| | — | United States Steel Products Co. | — | |
| | — | Universal Atlas Cement Co. | — | |
| | — | Virginia Bridge Co. | — | |
| | — | United States Steel Products Co. | 65 | |
| | — | Universal Atlas Cement Co. | — | |
| | — | | V | |
| | — | Valley Mould & Iron Corp. | — | |
| | — | Vickers, Inc. | — | |
| | — | Virginia Bridge Co. | — | |
| | — | Vulcan Steam Forging Co. | 104 | |
| | — | | W | |
| | — | Wagner Electric Corp. | 93 | |
| | — | Waldron, John, Corp. | — | |
| | — | Washburn Wire Co. | — | |
| | — | Wean Engineering Co., Inc. | — | |
| | — | Weirton Steel Co. | — | |
| | — | Welding Equipment & Supply Co.. | — | |
| | — | Wellman-Smith Owens Eng. Corp. Ltd. | — | |
| | — | Western Precipitation Corp. | — | |
| | — | Westinghouse Electric & Mfg. Co. | — | |
| | — | West Penn Machinery Co. | — | |
| | — | West Steel Casting Co. | 104 | |
| | — | Whitcomb Locomotive Co., The, Div., | — | |
| | — | The Baldwin Locomotive Works.... | — | |
| | — | Whitehead Stamping Co. | — | |
| | — | White Tar Co. of New Jersey, Inc.... | — | |
| | — | Wickwire Brothers | — | |
| | — | Wickwire Spencer Steel Co. | — | |
| | — | Wilcox, Crittenden & Co., Inc. | — | |
| | — | Wilson, Lee, Engineering Co. | — | |
| | — | Wilson Welder & Metals Co., Inc. | — | |
| | — | Wisconsin Steel Co. | — | |
| | — | Witt Cornice Co., The | — | |
| | — | Wood Preserving Corp., The | — | |
| | — | Worthington Pump & Machinery Corp. | 36 | |
| | — | Worth Steel Co. | 14 | |
| | — | Wyckoff Drawn Steel Co. | — | |
| | — | | Y | |
| | — | Yale & Towne Mfg. Co. | 79 | |
| | — | Youngstown Alloy Casting Corp. | — | |
| | — | Youngstown Sheet & Tube Co. | 55 | |

PRODUCTION INCREASED 60% V

MODERN GAS-FIRED ALLOY FURN

Important operating improvements—uniform heat distribution, radically reduced fuel consumption, and longer life for crucibles and crucible linings—were brought about by the installation of the GAS-fired furnaces shown below for the melting of alloys.

Production was increased about 60%, according to an estimate by the manufacturer, with a corre-

sponding saving in all items which final cost of melting metals. Conve modern GAS installation was a big up-to-date, efficient layout of the plant

If you use heat in any of your plant investigate the money-saving, profit-making of modern GAS-fired equipment.



Battery of GAS-fired furnaces for the melting of alloys. Photo courtesy of Campbell-Hausfeld Company, Harris

There's Nothing Like GAS For

| | | |
|-------------------------------------|-------------|-------------|
| HARDENING | NORMALIZING | FORGING |
| ANNEALING | BLUEING | GALVANIZING |
| TEMPERING | CARBURIZING | CORE BAKING |
| MALLEABLEIZING | NITRIDING | |
| and many other Industrial Processes | | |

THE TREND TODAY IS TO
INDUSTRIA

AMERICAN GAS ASSOCIATION
INDUSTRIAL GAS SECTION
420 LEXINGTON AVENUE, NEW YORK

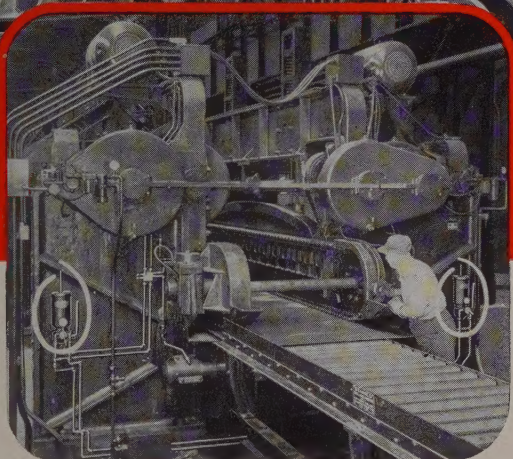
"All Bearings are Lubricated By *Farval* and so -



"We will always be at a minimum"
Streine Tool & Manufacturing Co.,
the "Stamco" Automatic Resquaring
Line shown above. This modern sheet-trim-
ming line, installed in one of the Steel
Plant's largest and newest mills, is served by
Farval Centralized Systems.

It does more than "keep maintenance at
a minimum." It keeps production at the maximum.
It eliminates the hazard of shut-downs due to
neglect of bearings. It increases the pro-
ductivity of your machinery by reducing
downtime. It eliminates labor of oiling
bearings. It saves lubricant. It reduces repair bills;
it prolongs machine life.

Farval is a Division of The Cleveland Worm & Gear Company, Manufacturers of Automotive and Industrial Worm Gearing



Farval Central
Pumping Units,
located at safe,
accessible points
on this Re-
squaring Line,
deliver lubrication
to every bearing at cor-
rect intervals,
missing none.

Farval Centralized Systems deliver clean lubri-
cant under high pressure from one central
station to a group of bearings, in exact measured
quantities, and at regular intervals. Operation
is constant and positive, regardless of the
number of bearings in the System—and not a
one is missed.

A Farval Representative, especially familiar with
the correct methods of lubricating Steel Plant
Equipment, will gladly call. The Farval Corpo-
ration, 3270 East 80th Street, Cleveland, Ohio.

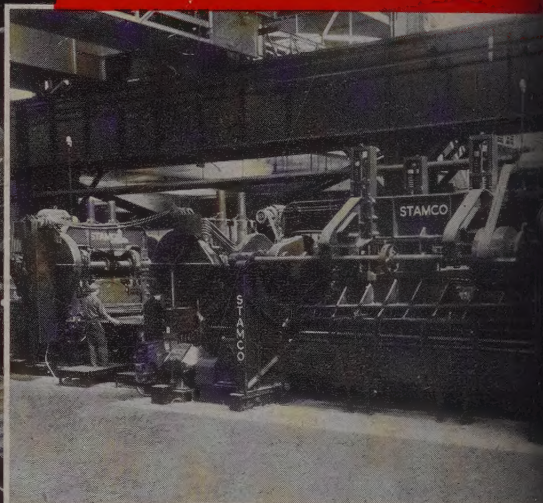
FARVAL

CENTRALIZED SYSTEMS OF LUBRICATION

STAMCO AUTOMATIC SHEARS ARE EQUIPPED WITH TIMKEN BEARINGS



{ Where Precision and Endurance
Must Go Hand-In-Hand



Stamco Automatic Resquaring Shears Equipped with TIMKEN Bearings. Photographs by courtesy of Carnegie-Illinois Steel Corporation.



A symbol of quality for any piece of equipment
with which it is associated

The Stamco Automatic Shears installed on shear lines 1, 2 and 3 at the Carnegie-Illinois Steel Corporation are designed to shear steel shears free from camber and square to customers' requirements.

This calls for a high degree of strength and accuracy, the responsibility must to a considerable extent be borne by the shear bearings.

The Streine Tool & Manufacturing Company, shear manufacturers, make their responsibility would not be misplaced when they selected TIMKEN Tapered Roller Bearings for the job.

Just another instance of the confidence equipment manufacturers and users place in TIMKEN Bearings and Timken Bearing Equipped products.



THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN

TAPERED ROLLER BEARINGS